

PEST MANAGEMENT ALLIANCE PROJECT FINAL REPORT

Agreement Number 99-0257

The California Winegrape Pest Management Alliance Project

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EXECUTIVE SUMMARY

This report covers those objectives, tasks, and activities related to the first year of the California Winegrape Pest Management Alliance (PMA) project, contract 99-0257. A second year of the project currently is underway, and a PMA grant for the third year recently was awarded.

The Winegrape PMA Steering Committee was formed in August 1999 as a group of grower organizations and wineries committed to sustainable viticulture. It includes representatives from Allied Grape Growers, American Vineyard Foundation, Calaveras Wine Association, California Association of Winegrape Growers, California North Coast Grape Growers Association, Central Coast Vineyard Team, Clarksburg Wine Growers Association, Lodi-Woodbridge Winegrape Commission, Mendocino Winegrowers Alliance, Monterey County Grape Growers, Napa Valley Grape Growers, Robert Mondavi Winery, and Sonoma County Grape Growers Association. Technical advisors for the California Winegrape PMA include representatives from UC Cooperative Extension, UC Sustainable Agricultural Research and Education Program, USDA-ARS, and US EPA Region 9. A representative of DPR is directly associated with and an important contributor to the project. Collectively, the Steering Committee and Technical Advisors constitute the PMA Management Team.

The overarching goal of the Winegrape PMA is to promote and increase the adoption of reduced-risk pest management practices in winegrapes throughout California. To complement and expand regional efforts, the project is focusing on the top two statewide problems involving pesticide risks and winegrape production – 1) sulfur drift and 2) uses of herbicides either classified as groundwater contaminants or FQPA (1996 Food Quality Protection Act) priority I (highest risk) materials. For year one, the specific objective was to develop and execute a statewide program to demonstrate and expand outreach on sulfur best management practices and reduced-risk weed management strategies. The educational program primarily targeted English-speaking growers and pest control advisors (PCAs), with some effort directed towards the general public.

A systems-based approach was used to implement two major tasks: (1) demonstrate strategies and (2) expand outreach. Elements for demonstrating strategies were: (a) recruit and retain a project coordinator, (b) inventory regional activities and assemble information on sulfur best management practices and reduced-risk weed management options, (c) develop educational material on reduced-risk practices for managing sulfur and weeds, (d) recruit 20 grower-cooperators to demonstrate reduced-risk strategies and tactics, (e) implement reduced-risk options at demonstration vineyards, (f) organize and hold field days in each region, and (g) document vineyard practices at demonstration sites, field day participation, and other evaluation components. Elements for expanding outreach were: (a) conduct media and public relations training, (b) produce and disseminate educational material on sulfur best management practices and reduced-risk weed management for newsletters and web sites, (c) disseminate educational materials at field days, and (d) conduct community outreach on sulfur best management practices and reduced-risk weed management strategies.

All demonstration and outreach activities were successful and are a result of effective collaborations (i.e., partnerships) among individuals and groups from different backgrounds and

interests working towards the common goals of increasing the adoption of reduced-risk pest management and improving relations between agricultural and non-agricultural communities. Important collaborations established by the PMA that continue to contribute to its success include the collective buy-in and assistance from major wineries across the state, the cooperation and information sharing across winegrowing regions and grower organizations, and the combined effort by the Winegrape PMA, the Sulfur Task Force, county agriculture commissioners, and DPR in reducing sulfur drift incidents through jointly prepared and shared presentations and compositions.

The field events were especially successful. Fourteen field events (field days and workshops) were organized and held for winegrowers and PCAs in four (North Coast, Central Coast, Northern Interior, and South Central Valley) of the five major winegrowing regions in California. These events included participation and presentations by combinations of growers, PCAs, extensionists, researchers, and county regulators. Topics included presentations on the Winegrape PMA and its objectives, specific reduced-risk strategies and tactics for managing sulfur and weeds, relevant laws and regulations, and field demonstrations of management practices and results. Additionally, presenters described how practices used for managing sulfur and weeds affect and can be beneficially integrated with other components of the whole farming system. Emphasis was placed on applying reduced-risk approaches for managing sulfur and weeds as models for dealing with other pest-related problems.

Through field events, the project educated an estimated 979 growers and PCAs (average of 70 attendees per event). Attendee feedback from questionnaires was excellent, with most participants enjoying and indicating the usefulness of presentations and demonstrations. Numerous other winegrowers, PCAs, and agriculturists were educated via 14 formal seminars, six trade magazine articles, and 15+ newsletter and web site publications, and one-to-one communication.

Progress also has been made in enlightening the public to the challenges faced by winegrowers and to their commitment to taking safe, effective management actions. Achievements here included two field days for the general public, one on the Central Coast and one on the North Coast.

Although progress was expected after one year of effort, the Winegrape PMA is envisioned as a multiple-year project, with significant achievements expected as a result of repetition and expansion of work over time. The programs designed for years two and three are being expanded to include significant programs for educating Spanish-speaking workers and foremen and the general public, as well as English-speaking growers and PCAs. The synergy resulting from educating the three groups should greatly reduce real and perceived risks associated with pesticides and improve inter-group understandings and relationships.

By intensifying and expanding effort over three years, the project expects to achieve marked reductions in complaints of sulfur drift and uses of higher-risk herbicides. Effort is underway to conduct regional trends analysis for pesticide uses over time, which will include updated data for fungicide and herbicide uses. The project expects to accomplish reductions in acres treated and/or median application rates by up to 10% over a three-year period for herbicides that pose

relatively higher risks to human health (e.g., oxyfluorfen, simazine, gramoxone) and for those that pose risks to surface water and/or groundwater (e.g., simazine, diuron). Through intensive and expanded demonstration and outreach, the project intends to greatly decrease reported incidents of sulfur drift.

The continued execution of the Winegrape PMA project will speed the adoption of reduced-risk pest management among California's 4,400 winegrape growers, protecting the public interest through minimizing human health and environmental risks and promoting sustainable practices in the \$1.89 billion winegrape industry.

BODY OF REPORT

Introduction

The California winegrape community currently is involved in a second year of its partnership with the California Department of Pesticide Regulation (DPR) on a Pest Management Alliance (PMA) project to speed the adoption of reduced-risk pest management in California winegrapes. This report covers those objectives, tasks, and activities for the first year, June 15, 2000 – June 30, 2001.

The US wine community has adopted a strategic vision to be leaders in sustainable practices (*American Vineyard*, March 2000b). On a statewide level, the California Winegrape Growers Association (CAWG) has made a commitment to encourage growers to adopt sustainable vineyard practices. This is best exemplified by CAWG's leadership in ensuring the success of the Winegrape PMA program (Browde, 2001a-c; *Vineyard & Winery Management*, 2001) and through a recent collaboration with the Wine Institute to begin developing a Code of Sustainable Winegrowing Practices for California. In future years, the Winegrape PMA is positioned to help implement elements of this Code.

Organizational Structure

The Winegrape PMA Steering Committee was formed in August 1999 as a group of grower organizations and wineries committed to sustainable viticulture. It includes representatives from Allied Grape Growers, American Vineyard Foundation, Calaveras Wine Association, CAWG, California North Coast Grape Growers Association, Central Coast Vineyard Team, Clarksburg Wine Growers Association, Lodi-Woodbridge Winegrape Commission, Mendocino Winegrowers Alliance, Monterey County Grape Growers, Napa Valley Grape Growers, Robert Mondavi Winery, and Sonoma County Grape Growers Association. Technical advisors for the California Winegrape PMA include representatives from UC Cooperative Extension, UC Sustainable Agricultural Research and Education Program, USDA-ARS, and US EPA Region 9. A representative of DPR is directly associated with and an important contributor to the project. Collectively, the Steering Committee and Technical Advisors constitute the PMA Management Team (Table 1).

Individually, California's winegrape associations have shown leadership in educating growers about reduced-risk pest management. Such efforts include those by the Lodi-Woodbridge Winegrape Commission (Ohmart, 1998), the Central Coast Vineyard Team (Central Coast Vineyard Team, 1998), the Sonoma County Grape Growers Association (*American Vineyard*, 2000a), the Napa Sustainable Winegrowing Group (Napa Sustainable Winegrowing Group, 1997), and the Sonoma Valley Vintners and Growers Alliance (Wickerhauser et al., 1998). Importantly, the Winegrape PMA does not duplicate regional efforts but collaborates closely and effectively with regional organizations to complement and expand activities by providing the organizational framework and teamwork for effectively resolving statewide problems through the efficient transfer of pest management information within and among regions.

Table 1. Winegrape PMA Management Team and Type of Support.

Individual & Affiliation	Representing	Support
Kendra Baumgartner USDA-ARS	USDA-ARS	Technical Advisor – in-kind time and travel
Larry Bettiga UCCE – Viticulture Farm Advisor	UCCE	Technical Advisor – in-kind time and travel
Jeff Bitter Allied Grape Growers	Allied Grape Growers	Steering Committee member – in-kind time and travel
Mike Boer AG Unlimited	Mendocino Winegrowers Alliance	Steering Committee member – in-kind time and travel
Jenny Broome UC SAREP	UC SAREP	Technical Advisor – in-kind time and travel
Joe Browde, Private Consultant	CAWG	Project Coordinator
Jeff Dlott, Real Toolbox	CAWG	Consultant
Nick Frey Sonoma County Grape Growers Association	Sonoma County Grape Growers Association	Steering Committee member – in-kind time and travel
Patrick Gleeson American Vineyard Foundation	American Vineyard Foundation	Steering Committee member – in-kind time and travel
Kurt Hembree UCCE – Weed Farm Advisor	UCCE	Technical Advisor – in-kind time and travel
Rhonda Hood CA North Coast Grape Growers	CA North Coast Grape Growers Association	Steering Committee member – in-kind time and travel
Steve Kautz Ironstone Vineyards	Calaveras Wine Association	Steering Committee member – in-kind time and travel
Randy Lange Lange Twins, Inc.	CAWG	Steering Committee member – in-kind time and travel
George Leavitt UCCE – Viticulture Farm Advisor	UCCE	Steering Committee member – in-kind time and travel
David Lucas Lucas Winery	Robert Mondavi Winery	Steering Committee member – in-kind time and travel
Kelly Maher Domaine Chandon	Napa Valley Grape Growers Association	Steering Committee member – in-kind time and travel
Julie Nord Nord Coast Vineyard Services	Napa Valley Grape Growers Association	Steering Committee member – in-kind time and travel
Kris O'Connor Central Coast Vineyard Team	Central Coast Vineyard Team	Steering Committee member – in-kind time and travel
Cliff Ohmart Lodi-Woodbridge Winegrape Com	Lodi-Woodbridge Winegrape Commission	Steering Committee member – in-kind time and travel
Steve Quashnick Western Farm Service	CAWG	Steering Committee member – in-kind time and travel
Karen Ross, CAWG	CAWG	Principal Investigator
Jason Smith Valley Farm Management	Monterey County Grape Growers Association	Steering Committee member – in-kind time and travel
Katey Taylor Domaine Chandon	Napa Valley Grape Growers Association	Steering Committee member – in-kind time and travel
Lori Ann Thrupp US EPA Region 9	UC EPA Region 9	Technical Advisor – in-kind time and travel
Ed Weber UCCE – Viticulture Farm Advisor	UCCE	Technical Advisor – in-kind time and travel
Ken Wilson Wilson Farms	Clarksburg Wine Growers Association	In-kind time and travel as Steering Committee member

CAWG provides the institutional structure for the Winegrape PMA project. CAWG was founded in 1974 to represent the interests and concerns of wine and concentrate grape growers. Today, CAWG represents over 60% of California's winegrape growers. California ranks first in US winegrapes accounting for over 90% of all production. The 2000 crop was valued at approximately \$1.89 billion (MKF Research, 2001). Winegrapes are grown in 42 of California's 58 counties on an estimated 458,000 bearing and 110,000 non-bearing acres (CAWG, 2001). There are over 4,400 winegrape growers and 847 wineries that contribute to making wine the number one finished agricultural product in California with an estimated overall economic impact of \$33 billion per year as a sum of total spending (MKF Research, 2001).

Objectives and Tasks

The goals of DPR's PMA program, to encourage the development and demonstration of economically sound pest management systems that reduce pesticide risks to human health and the environment, are directly aligned with the goals of the winegrape industry. The combination of regional and statewide winegrape leadership along with the overlap in respective goals is ideal for maintaining a strong and effective PMA partnership with DPR to expedite the adoption of reduced-risk pest management systems in California winegrapes.

The overarching goal of the Winegrape PMA is to promote and increase the adoption of reduced-risk pest management practices in winegrapes throughout California. To complement and expand regional efforts, the project is focusing on the top two statewide problems involving pesticide risks and winegrape production – 1) sulfur drift and 2) uses of herbicides either classified as groundwater contaminants or FQPA (1996 Food Quality Protection Act) priority I (highest risk) materials. For year one, the specific objective was to develop and execute a statewide program to demonstrate and expand outreach on sulfur best management practices and reduced-risk weed management strategies. The educational program primarily targeted English-speaking growers and pest control advisors (PCAs), with some effort directed towards the general public.

Sulfur drift onto sensitive areas is an important concern. Human exposure to sulfur can cause eye and skin irritation and breathing difficulty. As an active ingredient, sulfur is the most commonly used pesticide in California agriculture and is a key tool for managing powdery mildew – one of the major diseases affecting winegrapes in California and throughout the world. Unfortunately, high profile reports of public complaints of sulfur drift have occurred in recent years. A majority of the reports during the interval 1997 to June 1999 cited grapes as the target source (**Figures 1 and 2**). Moreover, approximately 80% of the reports were attributed to dusting sulfur, which is extensively used due to its low cost and efficacy. Incidents included drift onto neighboring residences, schools, office buildings, moving vehicles, and workers in surrounding vehicles (Browde and Ohmart, 2001). A key factor for the increase in complaints is the increase in agricultural/urban interfaces. Despite sulfur being approved for organic farming, excessive drift complaints could lead to regulations that limit uses. Continued efforts in educating the winegrowing community and the general public should minimize pesticide drift incidents and help sustain the safe, effective uses of sulfur.

Figure 1. Sulfur Drift Incidents by Crop (1997-99)

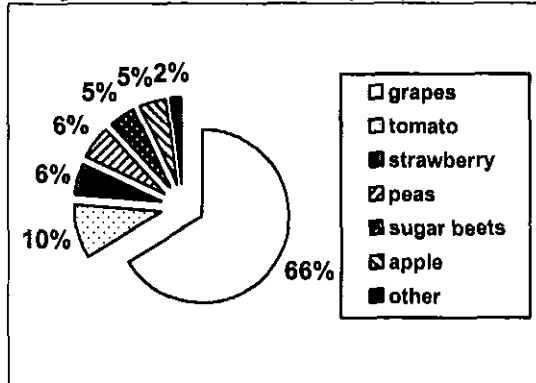
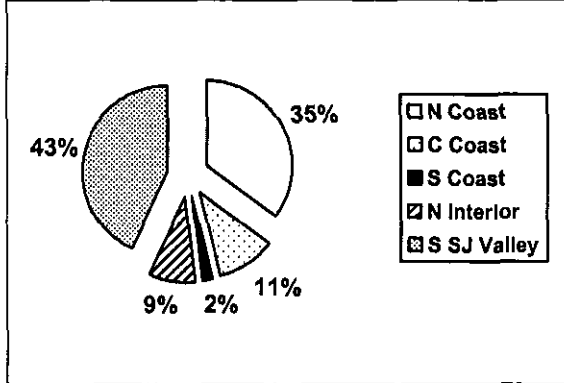


Figure 2. Sulfur Drift Incidents for Grapes by Region (1997-99)



There are statewide concerns about non-target effects of herbicides. Herbicides used in grape production have been detected in groundwater. Many herbicides registered for grapes also are considered higher-risk materials in terms of human health. Consequently, future regulations may restrict available herbicides and uses. This would be especially problematic since only one (Roundup, glyphosate) of the eight most commonly used herbicides on winegrapes (**Figure 3**) is considered a lower-risk material (Browde, 2001b-c). The Winegrape PMA intends to minimize non-target risks and facilitate grower preparedness through widespread communication of viable means to reduce uses of herbicides associated with groundwater contamination, e.g., simazine, diuron, and solicam, or listed as FQPA priority I materials, e.g., oxyfluorfen, simazine, gramoxone, and oryzalin (**Table 2**).

Figure 3. Herbicide Uses in Winegrapes (1998)

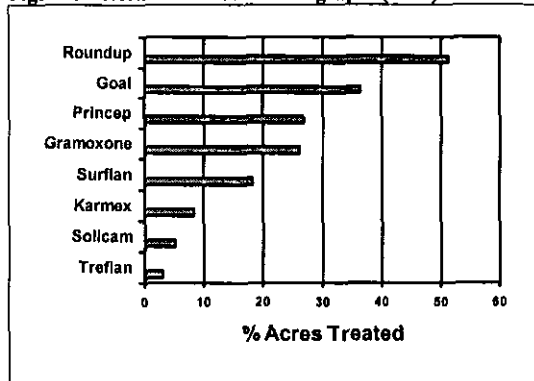


Table 2. Higher-risk Herbicides Registered for Grapes

Risk – water quality	Risk – FQPA I
• simazine (Princep)	• simazine (Princep)
• diuron (Karmex)	• oryzalin (Surflan)
• norflurazon (Solicam)	• oxyfluorfen (Goal)
	• paraquat (Gramoxone)
	• trifluralin (Trellan)
	• pedamethalin (Prowl)
	• 2,4-D (Envy)

To develop and execute a statewide educational program on reduced-risk practices for sulfur and weed management, the project had two key tasks for the first year: (1) demonstrate strategies and (2) improve outreach. The specific task elements used for achieving each task are listed in **Table 3**. The expected timeline for first-year activities is included in the **Appendices**.

Table 3. Tasks, Task Elements, and Responsible Individuals/Groups.

Task 1: Demonstrate Strategies Task elements listed below	Responsible for Task and Elements
(a) Recruit and retain project coordinator	Management Team
(b) Inventory regional activities and assemble information on region-specific sulfur best management practices and reduced-risk weed management strategies; and historic sulfur drift incidents reported to DPR and associated practices	Project Coordinator with assistance from Management Team
(c) Develop educational material on region-specific sulfur best management practices and reduced-risk weed management options	Project Coordinator with Management Team input and guidance
(d) Recruit four growers in each of five major production regions (20 total cooperators) to demonstrate sulfur best management practices and reduced-risk weed management strategies	Project Coordinator working with Management Team and other regional leadership
(e) Implement sulfur best management practices and reduced-risk weed management options at 20 demonstration vineyards	Grower-cooperators
(f) Organize and hold two field days per year at demonstration sites in each of the five regions – first field day to focus on reduced-risk weed management and second to focus on sulfur best management practices	Project Coordinator working with Management Team and grower-cooperators
(g) Document vineyard practices at 20 sites, field day participation, and other evaluations of project progress	Project Coordinator working with grower-cooperators

Table 3 continued. Tasks, Task Elements, and Responsible Individuals/Groups.

Task 2: Expand Outreach Task elements listed below	Responsible for Task and Elements
(a) Conduct three media and public relations training to improve outreach skills	Brown-Miller Communications working with Management Team and Project Coordinator
(b) Produce and disseminate timely educational material on sulfur best management practices and reduced-risk weed management strategies for regional and statewide newsletters and web sites	Project Coordinator working with regional and CAWG personnel and contractors on newsletter copy and web site content
(c) Disseminate educational materials on sulfur best management practices and reduced-risk weed management options at field days	Project Coordinator working with Management Team and grower-cooperators
(d) Conduct community outreach on sulfur best management practices and reduced-risk weed management strategies employed by local winegrape growers	Regional leadership (Management Team and other regional personnel) working with Project Coordinator and grower-cooperators

It was expected that the execution of the objective and associated tasks and elements would lead to measurable results in terms of demonstrating reduced-risk pest management practices in all major California winegrape growing regions, documenting these practices and reductions in risk, tracking and analyzing statewide data for sulfur drift incidents and pesticide uses for powdery mildew and weeds, and communicating results to agricultural and non-agricultural communities through aggressive outreach.

The project objective is consistent with the overall project goal of further speeding the wide-scale adoption of sustainable vineyard practices including sulfur best management practices and reduced-risk weed management strategies in all winegrowing regions of the state.

Results

The follows details project results by task and task element for year one.

Task 1: Demonstrate sulfur best management practices and reduced-risk weed management strategies.

(a) Recruit and retain project coordinator (original timeline – by August 1, 2000).

This task element was completed according to schedule.

(b) Inventory activities and assemble information on region-specific sulfur best management practices and reduced-risk weed management strategies; and historic sulfur drift incidences with associated practices reported to DPR (original timeline – August 1 – October 31, 2000).

This is a continual task for the duration of the Winegrape PMA project as new strategies and tactics evolve. However, for year one, this task element was completed to the extent of providing useful information for the production of educational materials.

Activities for achieving this element began during the first quarter, mostly involving the acquisition and review of applicable literature. Information was sourced from discussions with the Management Team, grower-cooperators, other growers and PCAs, field visits, and from pertinent literature such as the *Lodi Winegrower's Workbook* (Ohmart and Matthiasson, 2000); UC IPM Pest Management Guidelines; California Winegrape Crop/Pest Profile (1999); California Winegrape PMA Evaluation (Ross and Dlott, 2000); *Sulfur Best Application Practices Manual* (2000), and *Cover Cropping in Vineyards Handbook* (Ingels et al., 1998); and from resources relevant to managing diseases (Gubler et al., 1998; Gubler and Thomas, 1999; Stapleton et al., 1990) and weeds (Elmore et al., 1998a-b; Varela et al., 1995) and those characterizing the economics of wine production (Smith et al., 1999; Klonsky et al., 1998; Klonsky et al., 1997; Takele and Bianchi, 1996).

For the second, third, and fourth quarters, the project coordinator continued efforts by collecting information obtained from discussions and field visits with grower-cooperators, other winegrowers, PCAs, Management Team members, UC Cooperative Extension personnel, county agriculture commissioners, winegrower organizations, winery personnel, university researchers, Sulfur Task Force members, and DPR personnel.

To date, the project coordinator has witnessed and recorded existing practices in all five winegrowing regions, i.e., North Coast, Central Coast, South Coast, Northern Interior, and South Central Valley.

The project coordinator summarized and quantified historical records (1997- mid June 1999) for sulfur drift incidences across the state. Data were incorporated into trade articles published in May/June editions of *Practical Winery & Vineyard* and *CAPCA Adviser* magazines, and the summer edition of *California North Coast Vineyard News* (see **Appendices**). Copies of these articles were distributed at Winegrape PMA field days and workshops as educational materials. Data and understandings of associated practices leading to the incidents have been and are being used to position and intensify field demonstration activities and as a baseline for measuring progress towards reducing/eliminating sulfur drift incidents. Drift incident reports from mid June 1999 – present have been requested from DPR.

(c) Develop educational material for sulfur best management practices and reduced-risk weed management (original timeline - 1 September – 30 November 2000).

Teams composed of the project coordinator, principal investigator, winegrape growers, PCAs, and representatives of UC Cooperative Extension, UC Sustainable Agriculture Research and Education Program, EPA, and DPR have produced an assortment of educational material

pertaining to best management practices for sulfur and reduced-risk weed management. Materials include articles published in trade magazines, newsletters, and on web sites. Numerous educational handouts also have been prepared and distributed to winegrowers, PCAs, and the general public at field events and other outreach activities (see **Appendices**).

Winegrowers and PCAs are applying information from these educational materials to progress towards lower-risk, more sustainable pest management practices. For example, the article “Improving Sulfur Management” provides information that characterizes environments sensitive to sulfur and details 10 key elements to especially consider for managing sulfur near sensitive surroundings. Winegrowers can use this information to develop sulfur management plans specific for their vineyards.

Although the current focus is sulfur and weed management, the educational information (written and oral) provided by the Winegrape PMA advocates uses of biologically based, lower-risk approaches for managing all winegrape pests.

(d) Recruit growers in each production region to demonstrate sulfur best management practices and reduced-risk weed management strategies (original timeline - 1 November – 31 December 2000).

This element has been completed for year one. A total of 34 grower-cooperators (**Table 4**) were recruited across five winegrowing regions – North Coast (6), Central Coast (5), South Coast (2), Northern Interior (9), and South Central Valley (12). For each region, cooperators implemented various strategies and tactics for the reduced-risk management of sulfur and weeds based on circumstances specific for their regions and individual vineyards. Demonstration efforts across the state covered a wide variety of challenges and reduced-risk alternatives.

Table 4. Winegrape PMA Grower-cooperators (all providing in-kind services).

Individual	Demo Vineyard Location – Winegrape Region (County)	Reduced-risk Pest Mgt Target
Frank Alviso	Northern Interior (Amador)	Sulfur and Weeds
Dennis Atkinson	S San Joaquin Valley (Kern)	Weeds
Eddie Bolt	S San Joaquin Valley (Kern)	Weeds
Allan Butterfield	S San Joaquin Valley (Kern)	Sulfur and Weeds
Martin Carrillo	Northern Interior (Stanislaus)	Sulfur
Steve Carter	Central Coast (San Luis Obispo)	Weeds
Bill Chandler	S San Joaquin Valley (Fresno)	Weeds
Steve Christy	Northern Interior (Stanislaus)	Weeds
John Diener	S San Joaquin Valley (Fresno)	Weeds
Ben Drake	South Coast (Riverside)	Sulfur and Weeds
Ed Franceschi	Northern Interior (Sacramento)	Sulfur
Bruce Fry	Northern Interior (San Joaquin)	Weeds
Bart Haycraft	Northern Interior (San Joaquin)	Sulfur and Weeds
Jon Holmquist	S San Joaquin Valley (Madera)	Weeds
Mark Houser	North Coast (Sonoma)	Sulfur
Ray Jacobsen	S San Joaquin Valley (Fresno)	Weeds
Craig Macmillan	Central Coast (Santa Barbara)	Sulfur
John Maffeo	Northern Interior (Stanislaus)	Weeds
Ron Metzler	S San Joaquin Valley (Fresno)	Weeds
Roger Moitoso	Central Coast (Monterey)	Sulfur
Gerald Neuwirth	S San Joaquin Valley (Fresno)	Weeds
Julie Nord	North Coast (Napa)	Sulfur and Weeds
Tom Piper	North Coast (Mendocino)	Sulfur and Weeds
John Rauck	North Coast (Sonoma)	Weeds
Leland Rebensdorf	S San Joaquin Valley (Fresno)	Sulfur
Ed Rosenthal	S San Joaquin Valley (Madera)	Sulfur
Rich Smith	Central Coast (Monterey)	Weeds
Katey Taylor	North Coast (Napa)	Weeds
Bob Thomas	Central Coast (Santa Barbara)	Weeds
Barbara and David Uhlich	Northern Interior (San Joaquin)	Weeds
Joe Valente	Northern Interior (San Joaquin)	Sulfur
Craig Weaver	South Coast (Riverside)	Weeds
Mark Welch	North Coast (Mendocino)	Sulfur and Weeds
Gary Wilson	S San Joaquin Valley (Kern)	Sulfur and Weeds

(e) Implement reduced-risk options at demonstration vineyards (original timeline - begin December 2000).

The implementation of reduced-risk strategies and tactics for managing weeds began during November 2000. Options for sulfur best management practices generally started to be implemented at the beginning of the fourth quarter.

(f) Organize and hold field days at demonstration sites in each region (original timeline - begin January 2001).

Fourteen field days and workshops (indoor seminars followed by outdoor field demonstration components) for winegrowers and PCAs were conducted at demonstration vineyards across the regions. Three of these events took place during the third quarter, and 11 occurred during the fourth quarter. For these 14 events, three have been completed for the North Coast, six for the Central Coast, three for the Northern Interior, and two for the South Central Valley. Each event targeted either or both sulfur and weed management (**Table 5**).

No field events were held for the South Coast during year one. However, the project coordinator traveled to the South Coast and presented Winegrape PMA information to the Temecula Valley Winegrowers Association's executive director and two of its grower members, whose vineyards constitute a majority of the winegrape acreage for that area. Events for the South Coast are being planned for year two.

Table 5. Field Events (Field days and Workshops) for Winegrowers and PCAs; NC=North Coast, CC=Central Coast, NI=Northern Interior, SSJ=South Central Valley.

<u>Date</u>	<u>Location (region)</u>	<u>Topic(s)</u>	<u>No. winegrower & PCA attendees</u>
2/16/01	Paso Robles (CC)	Sulfur	90
2/22/01	Santa Ynez (CC)	Sulfur	50
2/23/01	Greenfield (CC)	Sulfur	20
3/29/01	Lodi (NI)	Weeds	108
4/5/01	Santa Maria (CC)	Weeds	100
4/6/01	Paso Robles (CC)	Weeds	30
4/24/01	Greenfield (CC)	Weeds	20
4/26/01	Santa Rosa (NC)	Sulfur & Weeds	132
5/1/01	Lodi (NI)	Sulfur	65
5/8/01	Hopland (NC)	Sulfur & Weeds	41
5/9/01	Carneros (NC)	Sulfur & Weeds	112
5/17/01	Madera (SSJ)	Sulfur & Weeds	41
6/6/01	Fresno (SSJ)	Sulfur & Weeds	130
6/20/01	Ceres (NI)	Sulfur & Weeds	40
			979 total

(g) Document reduced-risk practices at demonstration vineyards, field day participation, and other evaluation components (original timeline - begin December 2000).

Grower-cooperators have recorded and continue to record specific practices used for sulfur best management practices and reduced-risk weed management. The timely acquisition of these data has been more challenging than anticipated. Records will be used to further characterize various strategies and tactics, including economic considerations, for winegrower and PCA outreach.

Participation at field days and workshops is detailed in **Table 5**. Both the number of attendees and feedback from these events substantiate the enthusiasm and support for the project and its goals. Nearly all attendees that provided comments on evaluation forms (see **Appendices**) stressed the importance and high value of the content and the desire for similar future events in Spanish as well as English. Moreover, many winegrowers attended these Winegrape PMA events have volunteered to participate as grower-cooperators in the future.

The project coordinator, CDFA, and UC Sustainable Agriculture Research and Education Program are working collaboratively to conduct pesticide use trends analysis by year. Analyses will enable determinations of trends in uses of higher- and lower-risk herbicides over time. In an effort to monitor progress in reducing public complaints of sulfur drift, updated incident reports (mid June 1999 – present) have been requested from DPR. These reports will be summarized, quantified, and compared to the pre-PMA baseline (1997 – mid June 1999).

Task 2: Expand outreach on sulfur best management practices and reduced-risk weed management strategies.

(a) Conduct three media and public relations trainings to improve outreach skills (original timeline – begin August 2000).

This element was completed. Brown-Miller Communications presented three training workshops - “Understanding and Working with the Media” on November 28, 2000; “Improving Community Relations” on March 8, 2001; and “Tailoring Communications to Specific Audiences” on May 7, 2001. The project coordinator, Management Team, and grower-cooperators applied and continue to apply information learned from trainings to improve demonstration and outreach.

(b) Produce and disseminate educational material on sulfur best management practices and reduced-risk management strategies for regional and statewide newsletters and web sites (original timeline – begin October 2000).

Various written materials were prepared and published for the winegrowing community as a means to enhance their understandings and adoption of reduced-risk practices, as well to improve their relationships with the general public (**Table 6**). Six articles for trade magazines were published; one during the third quarter and three during the fourth quarter. During year one, 7+ newsletter articles and 8+ web site articles related to the Winegrape PMA were released. A poster on the Winegrape PMA was prepared, displayed, and discussed at the Partnerships for Sustaining California Agriculture Conference during the fourth quarter.

Table 6. Written Educational Materials prepared for Winegrowers and PCAs.

<u>Written Release</u>	<u>Where</u>	<u>When</u>
Taking Charge	Western Fruit Grower	Feb 2001
Improving Sulfur Management	Practical Winery & Vineyard	May/Jun 2001
The Winegrape Pest Management Alliance – An Update	CAPCA Adviser	May/Jun 2001
Are You a Good Neighbor	Vineyard & Winery Management	May/Jun 2001
Winegrape PMA Funded	American Vineyard	June 2001
Winegrowers Help Themselves Through Statewide Effort	CA North Coast Vineyard News	Summer 2001
7+ newsletter articles	regional/statewide ag newsletters	Aug 2000 – Jun 2001
8+ web site articles	regional/statewide ag web sites	Aug 2000 – Jun 2001
The California Winegrape Pest Management Alliance	poster @Partnerships for Sustaining California Agriculture Conference	March 27-28, 2001

(c) Disseminate educational materials on sulfur best management practices and reduced-risk weed management at field days (original timeline – begin January 2001).

Teams composed of the project coordinator, Management Team, winegrape growers, PCAs, and representatives of UC Cooperative Extension, UC Sustainable Agriculture Research and Education Program, EPA, and DPR produced the material listed in **Table 6** along with other educational material pertaining to best management practices for sulfur and reduced-risk weed management (see **Appendices**). These materials were widely distributed at field days, workshops, and other outreach events for the agricultural community and the general public.

(d) Conduct community outreach on sulfur best management practices and reduced-risk weed management strategies employed by local winegrape growers (original timeline – begin October 2001).

Much activity occurred for this element during year one. General outreach activities include those primarily conducted for the agricultural community (**Table 7**) and those for the general public (**Table 8**). In total, 14 formal presentations were made to the agricultural community, two radio interviews were conducted, two newspaper articles were published, and two field days were held for the general public. One field day was held during the third quarter in Santa Ynez (25 attendees) and one during the fourth quarter in Yountville (54 attendees). By educating both the winegrape community and the general public at the same time, the project is helping to ensure a commonality of understanding and purpose and, therefore, the sustainability of viticulture in California.

Table 7. Oral Outreach primarily conducted for the Agricultural Community; NC=North Coast, CC=Central Coast, NI=Northern Interior, SSJ=South Central Valley.

<u>Date</u>	<u>Event (region)</u>	<u>Topic(s)</u>
11/8/00	Grape Grower Trade Show North (NI)	PMA overview
11/17/00	Mendocino College Pest Mgt Seminar (NC)	PMA overview
1/4/01	Lakeport Growers Meeting (NC)	PMA overview & sulfur
1/18/01	Lakeport Growers Meeting (NC)	PMA overview & sulfur
2/1/01	CNCGGA Vineyard Regulations Seminar (NC)	PMA overview & sulfur
2/15/01	Sonoma County Vit Tech Group Meeting (NC)	PMA overview & weeds
2/16/01	Sonoma County Grape Day (NC)	PMA overview
3/15/01	North Coast CAPCA Meeting (NC)	PMA overview & sulfur
3/20/01	Yolo/Solano/Sacramento Counties UCCE and Clarksburg Wine Growers Meeting (NI)	PMA overview & sulfur
4/11/01	SCGGA IPM Meeting (NC)	PMA overview
4/25/01	E & J Gallo Grower Relations Meeting (state)	PMA overview
5/15/01	Temecula Valley Winegrowers Assoc Mtg (SC)	PMA overview
6/14/01	Pest Management Advisory Committee Mtg (state)	PMA overview & progress
6/15/01	Mondavi's 2001 Growers' Tech Seminar (state)	PMA overview & sulfur

Table 8. Written and Oral Outreach primarily conducted for the General Public; NC=North Coast, CC=Central Coast, NI=Northern Interior, SSJ=South Central Valley

<u>Date</u>	<u>Event (region)</u>	<u>Topic(s)</u>
1/11/01	KQED San Francisco radio interview (state)	PMA overview
2/2/01	KVEC San Luis Obispo radio interview (CC)	PMA overview
2/22/01	General Public Field Day, Santa Ynez (CC)	Community relations & reduced-risk pest mgt
4/24/01	Lodi Sentinel newspaper article (NI)	Sulfur stewardship
5/1/01	General Public Field Day, Yountville (NC)	Community relations & reduced-risk pest mgt
5/24/01	St. Helena Star newspaper article (NC)	Sulfur stewardship

Discussion

The specific goal of the Winegrape PMA is to develop and execute a statewide program to demonstrate and expand outreach on sulfur best management practices and reduced-risk weed management strategies. The key target audiences for the first year were English-speaking growers and PCAs, with some effort also devoted to educating the general public. The intent was to educate agriculturists about means to minimize pesticide risks and educate the public about the challenges faced by winegrowers and that most growers care and act to minimize pesticide risks.

All demonstration and outreach activities during year one were successful and are a result of effective collaborations (i.e., partnerships) among individuals and groups from different backgrounds and interests working towards the common goals of increasing the adoption of

reduced-risk pest management and improving relations between agricultural and non-agricultural communities. Important collaborations established by the PMA that continue to contribute to its success include the collective buy-in and assistance from major wineries across the state (e.g., Bronco, Canandaigua, Domaine Chandon, E & J Gallo, Fetzer, Kendall-Jackson, and Robert Mondavi), the cooperation and information sharing across winegrowing regions and grower organizations, and the combined effort by the Winegrape PMA, the Sulfur Task Force, county agriculture commissioners, and DPR in reducing sulfur drift incidents through jointly prepared and shared presentations and compositions.

The field events have been especially successful. Fourteen field events (field days and workshops) were organized and held for winegrowers and PCAs in four (North Coast, Central Coast, Northern Interior, and South Central Valley) of the five major winegrowing regions in California. These events included participation and presentations by combinations of growers, PCAs, extensionists, researchers, and county regulators. Topics included presentations on the Winegrape PMA and its objectives, specific reduced-risk strategies and tactics for managing sulfur and weeds, relevant laws and regulations, and field demonstrations of management practices and results. Additionally, presenters described how practices used for managing sulfur and weeds affect and can be beneficially integrated with other components of the whole farming system. Emphasis is placed on applying reduced-risk approaches for managing sulfur and weeds as models for dealing with other pest-related problems.

Through field events, the project educated an estimated 979 growers and PCAs (average of 70 attendees per event). Attendee feedback from questionnaires was excellent, with most participants enjoying and indicating the usefulness of presentations and demonstrations (see **Appendices**). Numerous other winegrowers, PCAs, and agriculturists were educated via 14 formal seminars, six trade magazine articles, and 15+ newsletter and web site publications, and one-to-one communication.

Progress also has been made in enlightening the public to the challenges faced by winegrowers and to their commitment to taking safe, effective management actions. Achievements here included two field days for the general public, one on the Central Coast and one on the North Coast.

Although progress was expected after one year of effort, the Winegrape PMA is envisioned as a multiple-year project, with significant achievements expected as a result of repetition and expansion of work over time. The educational program underway for year two (July 1, 2001 – June 30, 2002) is being expanded to include significant programs for educating English-speaking growers and PCAs and the general public, as well as some early effort targeting Spanish-speaking workers and foremen. The program envisioned for year three (July 1, 2002 – June 30, 2003) will be intensified and expanded to educate three key groups – English-speaking growers and PCAs, Spanish-speaking foremen and workers, and the general public. Collectively, these groups directly or indirectly influence vineyard activities. Unfortunately, most education programs promoting reduced-risk agriculture target only those English speakers directly involved in production. The synergy resulting from educating the three groups described here should greatly reduce real and perceived risks associated with pesticides and improve inter-group understandings and relationships.

By intensifying and expanding effort over three years, the project expects to achieve marked reductions in complaints of sulfur drift and uses of higher-risk herbicides. The project is directly measuring reductions in risks by analyzing regional changes in reports of sulfur drift as well as fungicide and herbicide uses on California winegrapes as annual DPR pesticide use report (PUR) data become available. The project has already established baseline regional herbicide and sulfur use trends (percent acres treated, median rates, and median applications per acre) with the 1998 PUR data set as presented in the California Winegrape PMA Evaluation (Ross and Dlott, 2000). Effort is underway to conduct regional trends analysis for pesticide uses over time, which will include updated data for fungicide and herbicide uses. The project expects to accomplish reductions in acres treated and/or median application rates by up to 10% over a three-year period for herbicides that pose relatively higher risks to human health (e.g., oxyfluorfen, simazine, gramoxone) and for those that pose risks to surface water and/or groundwater (e.g., simazine, diuron). The project will continue to track and compile data on reported sulfur drift incidents associated with winegrape production. Through intensive and expanded demonstration and outreach, the project intends to greatly decrease reported incidents of sulfur drift.

Summary and Conclusions

The Winegrape PMA project is envisioned as a multiple-year project, with significant progress anticipated as a result of repetition and expansion of effort. The key objectives over the first three years are detailed below.

Year one (June 15, 2000 – June 30, 2001)

- Begin English-speaking grower and PCA education related to reduced-risk pest management (key targets = sulfur and weeds)
- Begin activities related to public education (general target = growers care and act)

Year two (July 1, 2001 – June 30, 2002)

- Continue English-speaking grower and PCA education related to reduced-risk pest management (key targets = sulfur and weeds)
- Expand activities in public education (general target = growers care and act)
- Begin educational activities for Spanish-speakers (key targets = sulfur and weeds)

Year three (July 1, 2002 – June 30, 2003)

- Continue English-speaking grower and PCA education related to reduced-risk pest management (key targets = sulfur and weeds)
- Continue activities in public education (general target = growers care and act)
- Expand educational activities for Spanish-speakers (key targets = sulfur and weeds)
- Begin transitioning the Winegrape PMA to help implement the Wine Institute's and CAWG's Code for Sustainable Winegrowing Practices

In summary, the Winegrape PMA had a successful first year. Key project accomplishments were:

- 1) Buy-in and assistance from winegrower organizations and major wineries, e.g., Bronco, Canandaigua, Domaine Chandon, E & J Gallo, Fetzer, Kendall-Jackson, and Robert Mondavi
- 2) Partnerships with DPR, EPA, UC Cooperative Extension, UC Sustainable Agriculture and Education Program, Sulfur Task Force, agriculture commissioner's offices, winegrowers, PCAs, and wineries
- 3) 34 grower-cooperators recruited (target was 20) - North Coast (6), Central Coast (5), South Coast (2), Northern Interior (9), South Central Valley (12) – **Table 4**
- 4) 14 field days/workshops totaling 979 attendees have been held for growers and PCAs (original target was 10 field events) – **Table 5**
- 5) 14 formal presentations (no field component) made to agricultural community (mostly growers and PCAs) – **Table 7**
- 6) 6 articles in trade magazines – **Table 6**
- 7) 7+ newsletter and 8+ web site publications – **Table 6**
- 8) 1 poster – **Table 6**
- 9) 2 field events held for the general public - **Table 8**
- 10) 2 newspaper articles and 2 radio interviews – **Table 8**

The activities conducted by the PMA have advanced concepts and application of reduced-risk pest management for winegrapes across the state by complementing and expanding regional integrated pest management and integrated farming programs and by providing crucial inter-regional sharing of information. The purpose is to promote sensible practices that limit environmental and human health risks from pesticides, keep growers in business (i.e., minimize economic risk), and foster positive human interaction. Efforts are expected to have marked impacts on reducing incidents of sulfur drift, reducing uses of higher-risk herbicides and other pesticides, and improving understandings and relationships between the agricultural community and the general public.

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APPENDICES

Timetable – Timeline for first year tasks (June 15, 2000 to June 30, 2001). Light gray marks the starting point and black the completion dates (if discrete item) for each task element**

	J	J	A	S	O	N	D	J	F	M	A	M	J
Task 1: Demonstrate Strategies													
Task Elements Listed Below													
(a) Recruit and retain project coordinator													
(b) Inventory regional activities & assemble information on sustainable sulfur and reduced-risk weed management strategies													
(c) Develop sulfur sensitive area mapping procedures & educational materials													
(d) Recruit 4 growers in each of 5 major production regions (20 total cooperators) to demonstrate sensitive area mapping & reduced-risk strategies													
(e) Implement sustainable sulfur application and reduced-risk weed management options at 20 demonstration vineyards													
(f) Organize and hold two field days per year at demonstration sites in each of the five regions. The first field day will target reduced-risk weed management. The second field day will focus on sustainable sulfur application strategies													
(g) Document vineyard practices at 20 sites, field day participation, and other evaluation components													
Task 2: Improve Outreach													
Task Elements Listed Below													
(a) Conduct three media and public relations training to improve outreach skills													
(b) Produce & disseminate educational material on sustainable sulfur and reduced-risk weed management strategies for regional and statewide newsletters and web sites													
(c) Disseminate educational materials on sustainable sulfur application and reduced-risk weed management options at field days													
(d) Conduct community outreach on sustainable sulfur and reduced-risk weed management strategies employed by local winegrape growers													

Taking Charge
BY Joe Browde, California Winegrape Pest Management Alliance

Prepared for publication in February edition of Western Fruit Grower

An effort is gaining momentum across California that is destined to set a standard within agriculture. The entire winegrape community is nurturing itself by taking decisive action to increase grower awareness and adoption of reduced-risk practices for managing vineyard pests. For California's winegrape growers, this is the latest and by far the broadest attempt yet at promoting sustainable agriculture through a collaborative effort of demonstration and outreach. "Through this proactive effort to highlight reduced-risk pest management, growers are emphasizing their desire for sustainable viticultural systems and harmonious community relationships," said Joe Browde, Project Coordinator.

In June 2000, the California winegrape community was awarded nearly \$100,000 by the Department of Pesticide Regulation (DPR) to support this statewide effort for speeding the adoption of reduced-risk pest management. This grant program targets alliance projects whose goals are to reduce risks associated with pesticide use. The Winegrape Pest Management Alliance (PMA), comprised of grower organizations statewide, will focus its first efforts on demonstration and outreach related to sustainable sulfur use and reduced-risk weed management. Besides funding from DPR, over 50% of project costs are shared by the California Association of Winegrape Growers (CAWG) and by in-kind contributions of time and expertise from regional winegrape organizations. CAWG is providing administrative leadership for the project. Karen Ross, President of CAWG, is the Principle Investigator.

Why is PMA targeting sulfur and weed management? On a statewide level, there have been recurring incidences of sulfur dust drifting into sensitive areas, e.g., school zones and public highways. Likewise, herbicides used in grape production have been found in groundwater in some areas of the state. Sulfur and herbicides remain important farming tools for winegrape growers across California and the safe, effective uses of these materials needs to be preserved. Reduced-risk practices already exist for sulfur application and weed management. Unfortunately, many of these practices are not widely known, particularly outside the immediate production region. Through statewide field demonstrations and aggressive outreach, the PMA intends to reduce complaints of sulfur drift and uses of higher-risk herbicides while sustaining the economic viability of viticulture.

Key to project success is effective grower-to-grower transfer of relevant information. Accordingly, over 20 demonstration vineyards have been established with grower-cooperators throughout five winegrape regions in California - North Coast, Central Coast, South Coast, Northern Interior, and South Central Valley. Grower-cooperators are recording their various reduced-risk practices for sulfur and weed management and will share and showcase practices at field days. Educational information is being provided via state and regional newsletters and web sites. In addition, Browde, Ross, and leaders of regional organizations are making presentations and otherwise communicating information about reduced-risk pest management throughout the state.

Two aspects of this project are critical. First, the program is grower driven. Although representatives from extension, research, and regulatory agencies provide technical assistance, it is the growers who have devised, are implementing, and, in short, own the program. Grower-led programs in integrated pest and farm management have been highly successful elsewhere at the regional level, e.g., Lodi-Woodbridge Winegrape Commission, Central Coast Vineyard Team, and Sonoma County Grape Growers Association. The PMA project, however, is unique in its statewide coverage, commitment, and implementation. Expectations are that the project will be a model for similar endeavors in agriculture at both state and national levels.

The California winegrape community has demonstrated a long-term commitment to speeding the adoption of reduced-risk pest management. The PMA is the latest example of how the winegrape community continues to band together and lead the way towards this goal. In addition to the regional efforts cited previously, the Napa Sustainable Winegrowing Group has a distinguished history in promoting the implementation of environmentally sensitive viticulture. The vision articulated by Wine Vision, a strategic plan of the wine and winegrape community, is to be leaders in sustainable practices – environmentally sound, socially responsible, economically viable.

With continued urbanization of rural areas and subsequent increases in the agricultural-urban interface, the public is increasingly concerned with how their foods and beverages are produced. Many concerns relating to pesticides are scientifically sound, e.g., simazine has been found in ground water. Growers know that pesticides have the potential to cause problems, particularly when used improperly. There will always be an evolution towards safer, more sustainable solutions to pest problems. Pesticide manufacturers recognize this and are redirecting efforts to produce products safer to both humans and the environment. Clearly, further regulation and losses of higher-risk pesticides will occur. It is critical that agricultural industries find solutions to pesticide-related problems before relied-upon tools are involuntarily eliminated. By addressing sulfur drift and the potential for groundwater contamination by herbicides, the PMA is such a proactive effort.

So, what can you do to help? You can support us by being an advocate of the principles underlying the PMA and by communicating its objectives. Growers and others involved in agricultural production can be especially helpful by actively sharing reduced-risk pest management practices, being considerate and proactive leaders in your communities, and by continuing to excel as caretakers of the environment, your employees, and your families. Updates on PMA activities will be provided by CAWG for regional newsletters and web sites. Please contact the CAWG office or the Winegrape PMA Project Coordinator to share ideas, request more information, or volunteer your services.

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Improving Sulfur Management

BY Joe Browde¹ and Cliff Ohmart²
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Prepared for publication in May/June edition of Practical Winery & Vineyard

Winegrowers have “dusted off” their sulfur dusters and are into another season of battling powdery mildew. Most growers know that the Department of Pesticide Regulation (DPR) has a watchful eye on dusting sulfur, primarily due to public complaints of drift.

Because of sulfur’s importance for mildew management programs across the state, we will review the issues with drift in sulfur application and suggest best management practices.

Sulfur is a natural element used safely for centuries to control plant pathogens and mites. As an active ingredient, sulfur is the leading pesticide used in California agriculture. It is a very important and effective tool for managing powdery mildew – one of the major diseases affecting winegrapes in California and throughout the world. Uncontrolled mildew seriously reduces both winegrape yields and quality.

Human exposure to sulfur can cause eye irritation, breathing difficulty, and skin irritation – especially in sensitive individuals. But, compared to most other pesticides, it has minimal effects on humans and the environment. In fact, sulfur use is approved for organic farming.

So, what is the concern?

The issue is clear. A number of high profile reports of sulfur drift have occurred over the last few years. Public complaints were the source for most of these reports. Consequently, DPR conducted a survey of all counties during June 1999. Results indicated that 34 drift incident reports involved sulfur in both 1997 and 1998. For 1999, 18 incidents involving sulfur drift already were reported by June.

About two thirds of the reports cited grapes as the target source (Figure 1), distributed throughout all winegrape regions (Figure 2). Moreover, approximately 80% of reports for grapes were attributed to dust applications (data not shown). Incidents included dust drifting from its intended crop target onto surrounding structures, such as neighboring residences, schools, and places of business. Dust drift onto workers in surrounding fields and moving vehicles also was reported.

Figure 1: Sulfur Drift Incidents by Crop (1997-99)

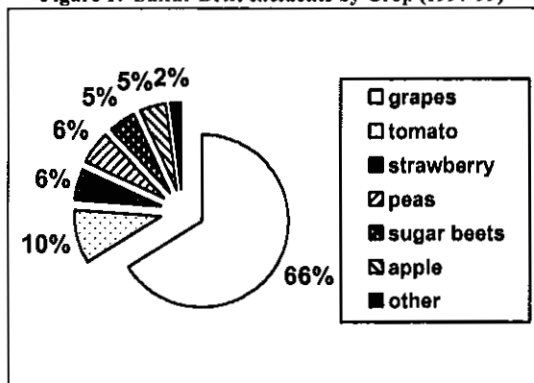
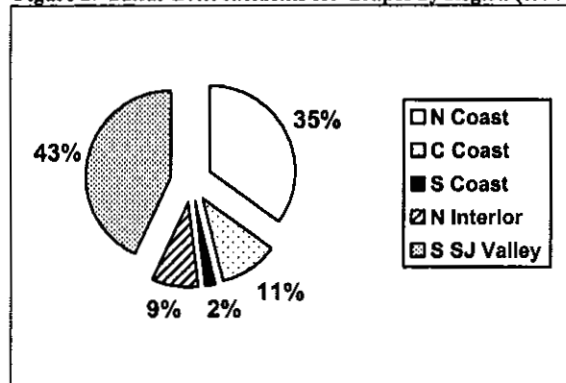


Figure 2: Sulfur Drift Incidents for Grapes by Region (1997-99)



Dusting sulfur constitutes the foundation for powdery mildew control in grapes throughout California. In fact, a majority of winegrape acres are treated with dusting sulfur each year – many treated repeatedly. Why have there been more complaints in recent times? The key factor seems to be the increase in agricultural/urban interfaces.

Many urbanites do not fully appreciate agriculture and the need for judicious, tactical intervention for managing pests. Unfortunately, too many regard all pesticides (including sulfur) as bad and equally

toxic. Because of its extensive use, visibility, and susceptibility to offsite movement by wind, dusting sulfur must be managed with particular care to prevent drift and complaints.

Collaborative efforts to improve sulfur management

According to the law, applicators must use pesticides in a manner that minimizes the potential for drift to nontarget areas. Due to increasing reports of sulfur drift, DPR put the sulfur registrants “on notice” in November 1999, with an opportunity to reduce complaints before imposing specific legal restrictions related to sulfur and its uses.

Sulfur registrants formed the Sulfur Task Force (STF), which developed a supplemental label for dusting sulfur. STF has worked with the Coalition for Urban/Rural Environmental Stewardship (CURES; Parry Klassen, executive director) to develop a sulfur stewardship program. The program includes production of stewardship manuals and implementation of a grower outreach program.

The California Winegrape Pest Management Alliance (PMA) is complementing and expanding the STF/CURES effort through additional education of winegrowers and the general public. PMA is a grower-driven collaboration with DPR to promote reduced-risk pest management.

The California Association of Winegrape Growers (CAWG) provides organizational leadership of PMA, and a steering committee, comprised of representatives from regional and statewide winegrape organizations, helps guide efforts. Funding is provided by a grant from DPR. Karen Ross, president of CAWG, is the principal investigator.

The Alliance strongly advocates educating the public about the low toxicity of sulfur, the rationale for mildew management, and the genuine concern farmers have for the welfare of their neighbors, employees, and environment.

But, the farming community must do its part by using best management practices for sulfur (and other pesticides) to minimize the potential for drift from treated vineyards, especially to surrounding “sensitive areas”. PMA is holding field days across the state as venues for grower-to-grower transfer of practical techniques and systems for managing sulfur near sensitive areas.

This dual education will mutually benefit the winegrape community and general public as sulfur management practices are improved, drift incidents are reduced, farmer-community relationships are enhanced, and sulfur and its uses are sustained. The intent is to greatly reduce or eliminate public complaints of sulfur drift.

What are sensitive areas?

Sensitive areas are locations surrounding a vineyard where people, organisms, or structures could be exposed to pesticides. Based on drift incidents with sulfur, these areas include schools, bus stops, busy roadways, residences, or other areas of human activity.

Sulfur sensitive areas also can include nearby crops (such as pears) and waterways. By careful evaluation, it should be easy to identify sulfur sensitive areas near vineyards. Growers should consider contacting their county agricultural commissioner’s office to help determine specific local sensitive areas.

How to reduce the potential for drift and avoid incidents?

Growers are integrating a number of practices into site-specific programs for effectively managing sulfur near sensitive areas. Growers can review the list below and work with applicators to develop a plan incorporating those practices appropriate for their vineyard and circumstances. It is critical that applicators fully understand the plan as it relates to the geography of the vineyard and surrounding areas. Many of these tactics also are described in the CURES publication *Sulfur, Best Application Practices*.

Best Management Practices

- *Being a Good Neighbor.* Sulfur stewardship includes being aware of the concerns of neighbors and local communities. Consider a policy of discussing vineyard actions with neighbors, speaking with community organizations about the importance of sulfur as a relatively benign crop protection tool, and forming a regional team of growers to serve as the first contact with the public for negotiations and troubleshooting. These actions enable mutual understandings and better relations, thus decreasing the probability of complaints.
- *Canopy Management.* Use trellis systems and canopy thinning techniques (e.g., leaf pulling, shoot thinning, cane cutting) that open canopies to recommended levels. Besides benefiting fruit quality, a properly opened canopy provides conditions less conducive to mildew and other diseases, potentially enabling use of lower sulfur rates and fewer applications for achieving adequate coverage.
- *Monitoring Mildew Development.* Use the powdery mildew index as a tool for optimally timing and possibly reducing the frequency of fungicide applications (including sulfur).
- *Establishing Buffers.* Establish reasonable buffer zones to prevent drift onto sensitive areas and public exposure to applications. Buffer distances vary with weather conditions, formulation (dust/wettable), application method (ground/air), presence of barriers (e.g., trees), and characteristics of sensitive areas. If buffers determined for dust application overlap some border vine rows, apply separate fungicide sprays (less prone to drift) to these rows or dust border vine rows during conditions when buffers can be reduced.
- *Dealing with Extra-Sensitive Areas.* Consider applying wettable sulfur or other low-risk fungicide sprays to vineyard portions or entire vineyards near extremely sensitive areas.
- *Selecting Rates.* Adjust rates of sulfur or other fungicides to the lowest effective rate according to vine growth and development. Higher label rates may not be required early in the season to achieve adequate coverage. Use of lower rates also can decrease risks of pesticide drift, particularly for dusting sulfur.
- *Equipment Operation.* Maintain, calibrate, and select application equipment to ensure accurate delivery of the intended rate. For dust, be extra cautious of drift during row turns and reduce RPM at row ends or shutoff dusting equipment if possible.
- *Weather Monitoring.* Monitor weather conditions before and during applications. No sulfur applications can be made when winds exceed 10 miles per hour, but consider using an even lower threshold. Avoid applications when winds are blowing towards sensitive areas and during temperature inversions.
- *Timing Applications.* Decrease public visibility and the potential for complaints by making applications during periods of least human activity (e.g., at night, weekends). Develop a sequence for application that attracts the least attention. For nighttime applications, minimize “noise” complaints by treating rows closest to residential areas before bedtime.
- *Resistance Management.* Although mildew resistance to sulfur has never been found, consider rotations with other fungicides as a preventive measure against resistance and potential sulfur drift.

It is important for winegrowers to be proactive in resolving important environmental and social issues. Addressing the issue of public complaints of sulfur drift is no exception. Growers must develop and apply best management programs for sulfur to prevent further regulation and to retain sulfur as a viable organic tool for agricultural production.

¹Joe Browde is Project Coordinator, California Winegrape Pest Management Alliance

²Cliff Ohmart is Research/IPM Director, Lodi-Woodbridge Winegrape Commission

The Winegrape Pest Management Alliance – An Update

**By Joe Browde, Project Coordinator
California Winegrape Pest Management Alliance**

Prepared for publication in May/June edition of CAPCA Advisor magazine

The California Winegrape Pest Management Alliance (PMA) is a grower-driven collaboration with the Department of Pesticide Regulation (DPR) to promote reduced-risk pest management in winegrapes. The California Association of Winegrape Growers (CAWG) provides organizational leadership and a steering committee, comprised of representatives from regional and statewide winegrape organizations, helps guide efforts. Karen Ross, president of CAWG, is the principal investigator. Technical advisors include members of the University of California Sustainable Agriculture Research and Education Program, United States Environmental Protection Agency Region 9, and DPR.

Funding for PMA is provided by DPR through its Pest Management Alliance Grants Program. Over 50% of costs are shared by CAWG and through in-kind contributions of time and expertise from grower-cooperators, the steering committee, and technical advisors.

Inception

PMA was formed in August 1999. A number of ongoing events reflected increased concerns with pesticides and threatened uses – implementation of the Food Quality Protection Act (FQPA), increases in agricultural-urban interfaces, detections and increased awareness of groundwater contamination and other off-target movement, and raised awareness of worker exposure. The winegrape industry realized these concerns and founded PMA as a mechanism to increase grower uptake of reduced-risk practices, thereby promoting win-win solutions for growers, communities, and the environment. The creation and purpose of PMA is directly aligned with “Wine Vision”, a strategic plan of the wine and winegrape community to be leaders in sustainable practices – environmentally sound, socially responsible, economically viable.

For winegrapes, PMA is unique in providing a strong, unified network for communicating pest management information to growers across California. Several regional organizations have grower-led programs for promoting sustainable farming practices. These include the Lodi-Woodbridge Biologically Integrated Farming System, the Central Coast Vineyard Team Positive Points System, and the Sonoma County Grape Growers Association Integrated Pest Management Program. PMA complements and improves regional efforts by supplying more extensive and updated information sourced from growers across the state. Moreover, where regional programs do not exist, PMA constitutes the main vehicle for grower-to-grower education about alternatives for managing vineyard pests.

Focus

PMA has the statewide mission to promote pest management practices that minimize the potential for environmental and human harm while maintaining the economic viability of production. The Alliance advocates that improved relations between winegrowers and their neighbors and communities are fundamental to sustainable agriculture. Therefore, one goal is to further educate the public about the logic for vineyard operations and that growers care and act to reduce pesticide risks and strengthen community relationships.

But, growers must do their part by continuing to adopt practices that minimize risks from pesticides. A key goal of PMA is to educate growers about how to eliminate drift incidents for sulfur and limit uses of higher-risk herbicides. Sulfur and herbicides are important tools for pest management in winegrapes across the state. However, uses are being carefully scrutinized by regulatory authorities

and could be subject to further regulation. It is important to maintain the safe, effective uses of sulfur and herbicides, as well as those for other pest management tools.

The issue with sulfur is clear. Reports of drift have increased in recent years. In fact, a survey conducted by DPR found 86 reported incidents of sulfur drift from 1997 to June 1999. Approximately two thirds of these reports were attributed to applications on grapes (Figure 1), distributed across the state (Figure 2). Over 80% of reports for grapes involved dusting sulfur. The key factor for the increase in incidents seems to be an increase in agricultural/urban interfaces, leading to more public complaints.

Figure 1: Sulfur Drift Incidents by Crop (1997-99)

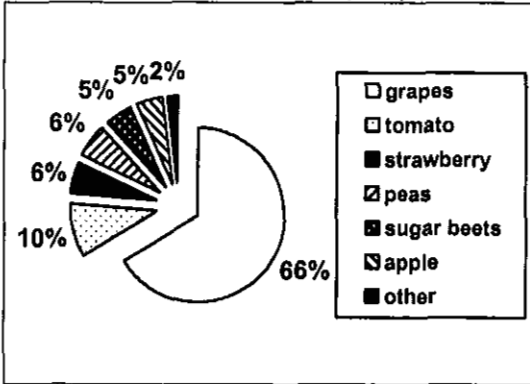
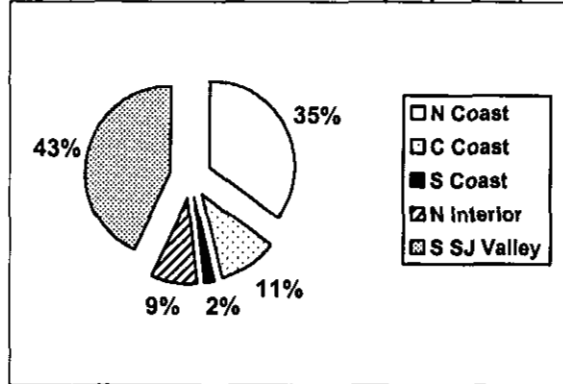


Figure 2: Sulfur Drift Incidents for Grapes by Region (1997-99)



There also are statewide concerns about effects of herbicides on the environment and human health. Herbicides used in grape production have been detected in groundwater in some areas. Further, many herbicides registered for grapes are considered higher-risk materials in terms of human health. Consequently, a number of herbicides and uses may be unavailable for the future. This is especially troubling since only one (Roundup, glyphosate) of the eight most commonly used herbicides on winegrapes (Figure 3) is considered a lower-risk material. For winegrapes, PMA intends to reduce uses of herbicides classified as potential contaminants of groundwater or FQPA high-risk (priority I) materials (Table 1).

Figure 3: Herbicide Uses in Winegrapes (1998)

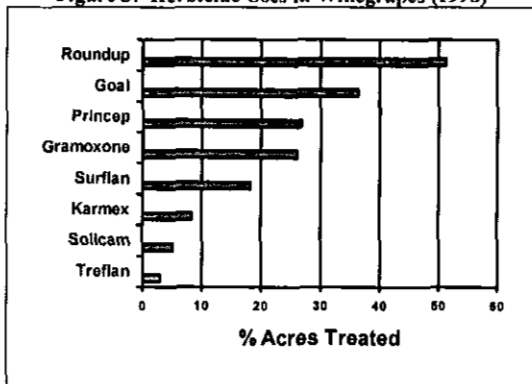


Table 1: Higher-risk Herbicides Registered for Grapes

Risk – water quality	Risk – FQPA I
• simazine (Princep)	• simazine (Princep)
• diuron (Karmex)	• oryzalin (Surflan)
• norflurazon (Solicam)	• oxyfluorfen (Goal)
	• paraquat (Gramoxone)
	• trifluralin (Trellan)
	• pedamethalin (Prowl)
	• 2,4-D (Envy)

Lower risk alternatives exist for managing sulfur and weeds, as well as for other pest-related problems. It is crucial that reduced-risk practices are shared and adopted by winegrowers across California. In this way, incidents (e.g., pesticide drift, water contamination) that increase chances of environmental or human injury, negative publicity, and further regulation are avoided. By sharing practices, winegrowers also are better prepared to implement alternatives should pesticide uses be involuntarily eliminated. Finally, and probably most importantly, it is important that winegrowers share and practice reduced-risk pest management to emphasize their commitment to environmental health and community harmony.

Actions

PMA is using field demonstration and aggressive outreach to communicate reduced-risk approaches for managing sulfur and weeds. The project coordinator, principal investigator, steering committee, and technical advisors are providing educational information via state and regional newsletters, web sites, trade magazines, and oral presentations. However, key to success is effective grower-to-grower transfer of practical information. Accordingly, 36 grower-cooperators have been recruited over five winegrowing regions – North Coast, Central Coast, South Coast, Northern Interior, and South Central Valley. Cooperators are implementing and recording reduced-risk management practices for sulfur and weeds, which they are sharing and showcasing at field days for winegrowers (Figure 4) and the public (Figure 5).

Figure 4: Weed Management Field Day for Growers, Lodi, March 2001

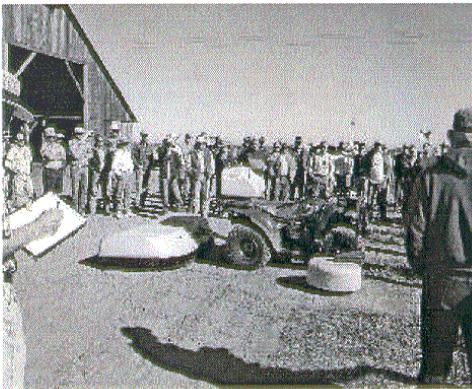


Figure 5: Public Education Meeting, Santa Ynez, February 2001



The Sulfur Task Force (STF), represented by sulfur registrants, has worked with the Coalition for Urban/Rural Environmental Stewardship (CURES; Parry Klassen, executive director) to develop and implement a stewardship program targeting all California agriculturists involved in sulfur application. Significant achievements include production of stewardship manuals and a grower outreach program. PMA is collaborating with STF and CURES to complement and expand the effort to reduce sulfur drift incidents through additional education of winegrowers, relying on grower-to-grower transfer of specific challenges and successes.

All sulfur cooperators have a history of farming near areas sensitive to sulfur (e.g., residences, school zones, busy roadways). These growers successfully integrate sulfur into management programs for powdery mildew without public complaints of drift. Dusting sulfur must be managed with particular care because of its extensive use, visibility, and susceptibility to offsite movement by wind. Programs incorporate elements of neighbor relations, canopy management, mildew monitoring, buffer establishment, alternative fungicides, equipment operation, weather monitoring, and application timing. Sulfur best management practices for winegrapes near sensitive areas are described in *Improving Sulfur Management* (Browde and Ohmart, May/June *Practical Winery & Vineyard*).

PMA cooperators demonstrating weed management were recruited based on their history of managing weeds using reduced-risk strategies and tactics. Pest management is a continuum from higher to lower risk. Ideally, pesticides categorized as higher risk are avoided. However, in the absence of reasonable options, PMA acknowledges that certain circumstances warrant uses of these materials. To optimize decisions for weed management, growers should have detailed understandings of weed species, soils, effectiveness of alternatives, and/or economic considerations specific to each vineyard. Growers that tolerate sub-economic populations of weeds are progressing fastest along the continuum to more

reduced-risk weed management. PMA cooperators restrict uses of higher-risk herbicides to situations where alternative tactics provide unacceptable efficacy or are economically impractical.

Cooperators incorporate various reduced-risk options into under-the-vine programs for managing weeds. Nonchemical tactics include mechanical options (e.g., cultivating, mowing, hand hoeing), preventive interference (e.g., mulching, composting, cover cropping), heat (e.g., flaming, steaming), and drip irrigation (e.g., subsurface). In addition to efficient water use, drip irrigation can markedly limit weed pressure both spatially and temporally, and needs for supplemental control.

Those cooperators that include herbicides in their reduced-risk programs often rely on lower-risk, post-emergent materials such as glyphosate (Roundup). Where higher-risk preemergent or postemergent herbicides are warranted, uses can be minimized and risks reduced by accurate calibration and by using lowest effective rates, decreased spray swaths, and optimal application timings. Spot spraying via infrared technology or by hand or use of controlled-droplet applicators can minimize uses of post-emergent herbicides and associated costs.

Expected Achievements and Future Goals

Through expanded winegrower education, PMA intends to reduce or eliminate complaints of sulfur drift and decrease uses of higher-risk herbicides. Cooperators will continue to be added to build the demonstration effort. Moreover, evolving practices for managing sulfur and weeds will be integrated into future demonstration and outreach activities. Over time, PMA will incorporate reduced-risk practices for managing other pests. An ultimate goal is to develop a statewide, grower self-assessment program for managing all vineyard pests.

Efforts to increase public understandings about real challenges faced by winegrowers and their commitment to making judicious choices will continue. The simultaneous education of growers and the public will lead to mutual understandings, improved farmer-community relationships, fewer pesticide incidents, and more sustainable farming systems.

For California's winegrowers, PMA is the latest and by far broadest effort at promoting sustainable viticulture through a cooperative effort of demonstration and outreach. Agriculture must be proactive in addressing and resolving challenges, such as risks from sulfur and herbicides, thereby helping direct and shape its own future. Through PMA, the winegrape community substantiates its lead role in sustainable agriculture by balancing the production of high quality winegrapes with high standards for environmental quality and human health.

Are You a Good Neighbor?

Publishers' Page

May/June edition of Vineyard & Winery Management

Growers have learned to be careful with what they do and use in the vineyard, but it is typically not their instinct to ask those around them, "Am I a good neighbor?" The California Winegrape Pest Management Alliance hopes to change that.

The California Winegrape Pest Management Alliance (PMA) is a grower-driven collaboration with California's Department of Pesticide Regulation. PMA's goal is to promote reduced risk of pest management in winegrapes. PMA is guided by a steering committee of industry grower and winery associations and is given organization leadership by the California Association of Winegrape Growers, Karen Ross president. It is a leg of the WineVision program. PMA uniquely provides a unified network for communicating pest management information to growers across the state.

PMA could be an excellent model for other grape growing regions where relentless suburbanization is encroaching on established farming areas.

Joe Browde, who is the project coordinator of the PMA, said at a recent meeting, "We want to decrease the risks associated with pest management, while being mindful of the need for efficiency and economy in what we do." In real time, this means carefully examining farming practices to see where spray programs can be modified or reduced to achieve the same degree of control with safer outcome for operator and the public alike.

At the same program, which was sponsored by the Sonoma County Grape Growers Association and the Russian River Wineries, Hoot Owl Creek Manager Mark Houser discussed what it means to be a good neighbor in the Alexander Valley. Showing a slide of alien-like creatures standing by a sprayer with a school in the background, he said, "The kids and their parents see you out there spraying, wearing protective gear, and they don't know what you're doing. You need good community relations here!" After discussing their practices with school officials, they mutually agreed on not spraying within 1/4 mile during school hours, and not using flail or rotary equipment within 100 yards of the school.

Steve Hill, manager of the Durrell Ranch vineyards, advised growers to look at vineyard practices from the vantage point of neighbors. All they may know about you is that you make noise, create spray or dust clouds, contaminate the ground water with chemicals, use excessive amounts of water that may threaten their own wells' supply, and that you cut trees to make room to plant more vineyards, which contributes run-off erosion to river beds. Obviously some good PR is needed!

Stressing that good communication means being firm with your neighbors about what you are not going to change, such as your basic intent to farm, you should tell them what to expect from your farming practices. "Buy don't make the mistake of promising them something you can't deliver," Hill said.

Being a good neighbor to Hill means being a good steward of the land. He advised to use water probes to monitor the need for water, do as much night farming as you can so your spraying is "out of sight, out of mind" of the neighbors. Make a point of choosing quiet running sprayers and other equipment, and make sure that your spraying and dusting equipment is operating at peak condition and running at the slowest, quietest speed that is still efficient, he concluded.

This focus on being a good neighbor shows the general public that grape growers are committed to reducing the risks associated with farming because they care about the consequences.

The means are well justified if the end result is a harmonious interface between the farming community and its neighbors.

See you in the vineyard!

Winegrowers Help Themselves Through Statewide Effort

**By Joe Browde, Project Coordinator
California Winegrape Pest Management Alliance**

Prepared for publication in summer edition of California North Coast Vineyard News

Since February of this year, 14 field days and workshops supporting a common cause have been held for winegrowers and the general public across California. The cause is to help sustain viticulture through a synergistic combination of grower and public education. One objective is to increase grower awareness and use of practices that minimize pesticide risks. The second objective is to enlighten the general public to the challenges faced by winegrowers and their commitment to taking safe, effective management actions. So, who is responsible for championing such a worthy cause? The answer is the California Winegrape Pest Management Alliance (PMA).

PMA is a grower-driven collaboration with the Department of Pesticide Regulation (DPR) to promote reduced-risk pest management. The California Association of Winegrape Growers (CAWG) provides organizational leadership and a steering committee, comprised of representatives from regional and statewide winegrape organizations, helps guide efforts. Funding is provided by grants from DPR. Karen Ross, president of CAWG, is the principal investigator.

Inception

PMA was formed in August 1999. A number of ongoing events reflected increased concerns with pesticides and threatened uses – implementation of the Food Quality Protection Act (FQPA), increases in agricultural-urban interfaces, detections and increased awareness of groundwater contamination and other off-target movement, and raised awareness of worker exposure. The winegrape industry realized these concerns and founded PMA as a mechanism to increase adoption of reduced-risk practices, providing win-win solutions for growers, communities, and the environment. The creation and purpose of PMA is directly aligned with “Wine Vision”, a strategic plan of the wine and winegrape community to be leaders in sustainable practices – environmentally sound, socially responsible, economically viable.

For winegrapes, PMA is unique in providing a strong, unified network for communicating pest management information to growers across California. A number of regional organizations have grower-led programs for promoting sustainable farming practices. These include the Lodi-Woodbridge Biologically Integrated Farming System, the Central Coast Vineyard Team Positive Points System, the Napa Sustainable Winegrowing Group, and the Sonoma County Grape Growers Association Integrated Pest Management Program. PMA complements and expands regional efforts by supplying more extensive and updated information sourced from growers across the state. Moreover, where regional programs do not exist, PMA constitutes the main vehicle for grower-to-grower education about alternatives for managing vineyard pests.

Focus

PMA has the statewide mission to promote pest management practices that minimize the potential for environmental and human harm while maintaining the economic viability of production. The Alliance advocates that improved relations between winegrowers and their neighbors and communities are fundamental to sustainable agriculture. Therefore, one goal is to further educate the public about the logic for vineyard operations and that growers care and act to reduce pesticide risks and strengthen community relationships.

But, growers must do their part by continuing to adopt practices that minimize risks from pesticides. A key goal of PMA is to educate growers about how to reduce drift incidents for sulfur and limit uses of higher-risk herbicides. Sulfur and herbicides are important tools for pest management in

winegrapes across the state. However, uses are being carefully scrutinized by regulatory authorities and could be subject to further regulation. It is important to maintain the safe, effective uses of sulfur and herbicides, as well as those for other pest management tools.

The issue with sulfur is clear. Reports of drift have increased in recent years. In fact, a survey conducted by DPR found 86 reported incidents of sulfur drift from 1997 to June 1999. Approximately two thirds of these reports were attributed to applications on grapes, distributed across the state. Over 80% of reports for grapes involved dusting sulfur. The key factor for the increase in incidents seems to be an increase in agricultural/urban interfaces, leading to more public complaints.

There also are statewide concerns about effects of herbicides on the environment and human health. Herbicides used in grape production have been detected in groundwater in some areas. Further, many herbicides registered for grapes are considered higher-risk materials in terms of human health. Consequently, a number of herbicides and uses may be unavailable for the future. This is especially troubling since only one (Roundup, glyphosate) of the eight most commonly used herbicides on winegrapes is considered a lower-risk material. PMA intends to reduce uses of herbicides classified as potential contaminants of groundwater or FQPA high-risk (priority I) materials.

Actions

PMA is using field demonstration and outreach to communicate reduced-risk approaches for managing sulfur and weeds. Key to success is effective grower-to-grower transfer of practical information. Accordingly, 35 grower-cooperators have been recruited over five winegrowing regions – North Coast, Central Coast, South Coast, Northern Interior, and South Central Valley. Cooperators are implementing and recording reduced-risk management practices for sulfur and weeds, which they are sharing and showcasing at field days for winegrowers and the public.

Sulfur cooperators have a history of farming near areas sensitive to sulfur (e.g., residences, school zones, busy roadways). These growers successfully integrate sulfur into management programs for powdery mildew without complaints of drift. Dusting sulfur must be managed with particular care because of its extensive use, visibility, and susceptibility to offsite movement by wind. Programs incorporate elements of neighbor relations, canopy management, mildew monitoring, buffer establishment, alternative fungicides, equipment operation, weather monitoring, and application timing.

Sulfur best management practices for winegrapes near sensitive areas are described in *Improving Sulfur Management* (Browde and Ohmart, May/June *Practical Winery & Vineyard*). PMA is collaborating with the Sulfur Task Force and the Coalition for Urban/Rural Environmental Stewardship in efforts to reduce sulfur drift incidents.

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CAWG Newsletter Release

The Winegrape Pest Management Alliance – A Statewide Partnership on a Mission

Last June, the California winegrape community was awarded nearly \$100,000 by the Department of Pesticide Regulation to support a statewide effort for speeding the adoption of reduced-risk pest management. This money came from a grants program that targets groups committed to working together in alliances towards reducing risks associated with pesticide use. The Winegrape Pest Management Alliance (PMA), comprised of grower organizations from across the state, is focused on progressing this objective by effectively demonstrating and expanding outreach on strategies for sustainable sulfur application and reduced-risk weed management. CAWG assumes an administrative role for the project, for which Joe Browde has been contracted as Project Coordinator.

Why is PMA focusing on sulfur and weed management? On a statewide level, there are concerns about the risks related to application of dusting sulfur and with specific herbicides. There have been too many incidences of sulfur dust drifting into sensitive areas, i.e., those regions with high public activity. Likewise, herbicides classified as higher risk are under increasing scrutiny by regulatory agencies and the public throughout the state. This is particularly true for certain herbicides linked to adverse effects on water quality. Sulfur and herbicides remain important farming tools for winegrape growers across California. It is the recognition of these risks associated with such widely important tools along with the fact that reduced-risk practices exist but need to be communicated better that make sulfur application and weed management ideal choices for the PMA program. Through statewide field demonstrations and outreach, PMA intends to virtually eliminate complaints of sulfur drift and greatly reduce the dependency on higher-risk herbicides while sustaining the economic viability of viticulture.

Two aspects of this project practically guarantee its success. First, the program is grower driven. Representatives from other groups, such as extension, research, and regulatory personnel, serve as technical advisors but it is the growers who have devised, are implementing, and, in short, own the program. Grower-led programs in integrated pest and farm management have been highly successful elsewhere at the regional level, e.g., LWWC, CCVT, and SCGGA. However, the PMA project is completely unique in that it has statewide coverage, commitment, and implementation. We expect that this project will be a model for similar endeavors in agricultural industry at both state and national levels. The California winegrape community has made a commitment towards promoting lower-risk pest management as part of sustainable farming. The PMA is the latest and most widespread example of how the winegrape community continues to band together and lead the way towards this goal.

So, why is this program important to you and what can you do to help? Like everything else, agriculture continues to evolve. Change is inevitable. You have probably heard the phrases, “business as usual is not good enough anymore” and “if you are not part of the solution you are part of the problem”. Well, both phrases are especially true for agriculture today, with the continued urbanization of rural areas and subsequent increase in agricultural-urban interaction. The public is increasingly concerned with how their foods and beverages are produced and what is in them. We cannot disregard the perceptions and comments of public-interest groups, no matter how strong the scientific bases for their claims. The PMA is representing you by acknowledging the public concerns about pesticides and by proactively working toward solutions.

Besides public perception alone, many of the concerns relating to pesticides are scientifically sound, e.g., environmental contamination, safety hazards to workers, food quality issues. As growers, you recognize that pesticides have the potential to cause problems, particularly when used improperly. There will always be an evolution towards safer, more sustainable solutions to pest problems. Pesticide

manufacturers recognize this and are redirecting efforts to produce products that are safer to both humans and the environment. Whether we like it or not, further regulation and losses of higher-risk pesticides will occur. It is critical that the winegrape community continues to realize change before it happens and proactively construct solutions, thereby positively influencing its own future. The PMA is doing this for you today.

You can support us by being an advocate of the principles underlying the PMA and by communicating its objectives, actively sharing your reduced-risk pest management practices, being considerate and proactive leaders in your communities, and by continuing to excel as caretakers of the environment and your employees. You will find updates on PMA activities in CAWG and regional newsletters and web sites. Please contact the Project Coordinator to share ideas, request more information, or volunteer your services.

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STAFF PROJECT UPDATE:

California Winegrape Growers Funded to Reduce Pesticide Risks

UC-SAREP Newsletter

The Winegrape Pest Management Alliance (PMA), comprised of grower organizations throughout California, was recently awarded a second grant of \$100,000 by the Department of Pesticide Regulation (DPR) to support a new effort to increase grower awareness about the adoption of reduced-risk practices for managing vineyard pests. PMA received the first award from DPR in June 2000.

Building on past successful efforts like the Biologically Integrated Farming Systems (BIFS) project of the Lodi Woodbridge Winegrape Commission, winegrape growers will be participating in a statewide effort to speed the adoption of reduced-risk pest management.

The PMA will focus its first efforts on demonstration and outreach related to sustainable sulfur use and reduced-risk weed management. In addition to the funding from DPR, more than 50 percent of the project costs are shared by the California Association of Winegrape Growers (CAWG) and by in-kind contributions of time and expertise from regional winegrape organizations and University of California researchers and educators. CAWG is providing administrative leadership for the project; Karen Ross, CAWG president, is serving as the project's principle investigator. Jenny Broome, SAREP associate director, is the technical advisor to the winegrape PMA, while Joe Browde is PMA project coordinator.

"For California's winegrape growers, this is the latest and by far the broadest attempt yet at promoting sustainable agriculture through a collaborative effort of demonstration and outreach," said Broome.

The PMA is targeting sulfur and weed management; on a statewide level, there have been recurring incidences of sulfur dust drifting into sensitive areas, including school zones and public highways. Similarly, herbicides used in grape production have been found in groundwater in some areas of the state.

"While sulfur and herbicides remain important farming tools for winegrape growers across California, their continued use may depend on how well the industry can demonstrate alternative practices and farming systems that reduce the potential risk of these materials," said Ross. "Through statewide field demonstrations and aggressive outreach, the PMA intends to reduce complaints of sulfur drift and uses of higher-risk herbicides while sustaining the economic viability of viticulture."

Key to the project's potential success is the fact that it is grower-driven, said Browde.

"Although representatives from extension, research, and regulatory agencies provide technical assistance, it is the growers who have devised, are implementing, and, in short, own the program," he said.

Grower-led programs in sustainable viticulture and integrated farming systems have been successful elsewhere at the regional level, including the Lodi-Woodbridge Winegrape Commission, Central Coast Vineyard Team, the Napa Sustainable Winegrowing Group, and Sonoma County Grape Growers Association.

"The PMA project is unique in its statewide coverage, commitment, and implementation," Broome said.

As with the above efforts, effective grower-to-grower transfer of relevant information is key, Broome added. To that end, more than 20 demonstration vineyards have been established with grower-cooperators throughout five winegrape regions in California: North Coast, Central Coast, South Coast, Northern Interior, and South Central Valley. Grower-cooperators are recording their various reduced-risk practices for sulfur and weed management and will share and showcase practices at field days. Educational information is being provided via state and regional newsletters and Web sites. In addition, Browde, Ross, Broome and leaders of regional organizations are making presentations and otherwise communicating information about reduced-risk pest management throughout the state.

To share softer approaches to weed and mildew management from your own operations or to learn more about the PMA, contact Browde at (707) 776-4943, mjbrowde@pacbell.net; Ross at (800) 241-1800 (CA only), (916) 924-5374, info@cawg.org; or Broome at (530) 754-8547, jcbroome@ucdavis.edu.

Steering Committee members include Randall Lange, Steve Quashnick, Karen Ross, CAWG; Howard Babcock, North Coast Grape Growers Association; Jeff Bitter, Allied Grape Growers; Mike Boer, Mendocino Winegrowers Alliance; Nick Frey, Sonoma County Grape Growers Association; Patrick Gleeson, American Vineyard Foundation; Steve Kautz, Calaveras Wine Association; David Lucas, Robert Mondavi Winery; Kelly Maher/Julie Nord, Napa Valley Grape Growers; Kris O'Connor, Central Coast Vineyard Team; Cliff Ohmart, Lodi Woodbridge Winegrape Commission; Ken Wilson, Clarksburg Wine Growers; Jason Smith, Monterey County Grape Growers. Technical advisors are Jenny Broome, UC SAREP; Lori Ann Thrupp, U.S. EPA – Region 9 Agricultural Initiative; Sewell Simmons, Department of Pesticide Regulation; and Joe Browde.

Pest Management Alliance Workshop – Big Success!

By Joe Browde, CA Winegrape Pest Management Alliance Project Coordinator, and Nick Frey, SCGGA Executive Director
SCGGA Newsletter

The Pest Management Alliance Workshop held April 26th at Kendall-Jackson Wine Center was a huge success. The theme was reduced-risk pest management, focused on reducing incidents of sulfur drift and uses of higher-risk herbicides (e.g., simazine). Interest was great, evidenced by over 130 winegrowers, PCAs, and others in attendance.

The program consisted of an indoor seminar followed by field demonstrations and discussions. Nick Frey and Warren Dutton (Russian River Valley Winegrowers, RRVW) opened the program by welcoming attendees. Joe Browde presented an overview of the PMA and detailed statewide concerns about sulfur drift and uses of problematic herbicides. Pierre Gadd (Sonoma County Chief Deputy Agriculture Commissioner) described regulations pertaining to pesticide drift, areas particularly sensitive to drift, and ways to mitigate drift and public complaints. Mark Houser (Hoot Owl Creek/Alexander Valley Vineyards) and Steve Hill (Durrell Ranch) reviewed their experiences and policies for negotiating sulfur and other pesticide applications near schools and other public areas, effectively balancing pest management and neighbor/community relations.

In the vineyard, Hector Bedolla (Kendall-Jackson), John Rauck (Calplans Vineyards), Paul Paddock (Sonoma Compost), and Steve Dutton (Dutton Ranch) demonstrated and/or discussed reduced-risk tactics for under-the-vine weed management. Hector described and demonstrated equipment used for mechanical weed control in Kendall-Jackson's organic vineyard at the Wine Center. John talked about tactics for managing weeds without preemergent herbicides. Paul demonstrated application of compost, and Steve displayed and described use of weed seeking sprayers.

On behalf of PMA, we thank all attendees for their participation. We especially thank SCGGA and RRVW for co-sponsoring the workshop, those individuals noted above for their presentations and demonstrations, RRVW for an exceptional lunch, and Kendall-Jackson for refreshments and use of facilities.

Pest Management Alliance Field Days - Great Success!
CAWG Newsletter

Significant progress has been made with the Winegrape Pest Management Alliance (PMA) project! Achievements of greatest impact include a number of highly successful field days and workshops for winegrowers, pest control advisors, and the general public.

A total of 12 field days/workshops for the winegrowing community have taken place – 3 North Coast, 6 Central Coast, 2 Northern Interior, and 1 Southern San Joaquin Valley. Each event targeted the improved management of sulfur and/or reduced-risk weed management. Speakers included Joe Browde (PMA project coordinator), UCCE farm advisors, representatives of county agriculture commissioner offices, and PMA grower-cooperators. The grower presentations about their specific strategies and tactics for managing sulfur and weeds were exceptional. The equipment demonstrations for under-the-vine weed management also were quite useful.

Two field events (1 North Coast, 1 Central Coast) have been conducted for the general public so far. By sharing their challenges, decision processes, and careful actions during winegrape production, growers speaking here empowered the public with better understandings and made great strides towards strengthening community relationships.

Participation in these events has been exceptional, with the number of attendees exceeding 100 on three occasions! A special thanks is due PMA cooperators who have helped sponsor these events and/or made presentations – Steve Carter, John Crossland, Bruce Fry, Bart Haycraft, Jon Holmquist, Mark Houser, Jon Kanagy, Craig Macmillan, Kelly Maher, Roger Moitoso, Gerald Neuwirth, Julie Nord, Tom Piper, John Rauck, Leland Rebensdorf, Ed Rosenthal, Rich Smith, Katey Taylor, Bob Thomas, Barbara and David Uhlick, Joe Valente, Mark Welch, and Ken Wilson.

These field events and workshops exemplify the success achieved by teams of winegrowers, extensionists, researchers, and regulatory personnel working together to reduce incidents of sulfur drift, minimize uses of higher-risk herbicides, and enhance relationships between winegrowers and their communities. The next PMA workshop is scheduled for June 6th at California State University, Fresno and is co-sponsored by Allied Grape Growers, E & J Gallo Winery, PMA, and Fresno State University.

Pest Management Alliance Field Day
April 26
Kendall-Jackson Wine Center
Fulton

Registration

8:30 Welcome Nick Frey SCGGA & Warren Dutton RRVW

8:45 -10:15 Sulfur

- Joe Browde, CAWG PMA Coordinator: The Pest Management Alliance project and Sulfur
- Pierre Gadd, Sonoma County Chief Deputy Agricultural Commissioner: Current regulations and problem areas for Sonoma County
- Mark Houser, Hoot Owl Creek/Alexander Valley Vineyards: Alexander Valley School/Farming Near Sensitive Sites
- Steve Hill, Durrell Ranch: Sensitive Sites Today and Management Choices to Consider

10:15 - 10:30 Break

10:30 - noon Field demonstrations -- Weed Control Practices

- Joe Browde: Why do we need Alternatives to Simazine
- Hector Bedolla, Kendall-Jackson: Weed Control in Organic Vineyards
- John Rauck, Calplans Vineyards: Weed Control on the Russian River
- Paul Paddock, Sonoma Compost: Demonstration -- Compost for Weed Control
- Steve Dutton, Dutton Ranch: Reducing Herbicide Use with Weed Seeking Sprayers

12:00 BBQ Lunch prepared by Russian River Valley Winegrowers

Funding provided by the Department of Pesticide Regulation

California Winegrape Pest Management Alliance Seminar and Field Day
May 8
@Fetzer Vineyards Tasting Room & Visitor Center
13601 Eastside Road, Hopland

*Coffee and Refreshments provided by
California North Coast Grape Growers Association*

- 8:30 am **Registration & Coffee**
- 9:00 am Welcome & Overview – The California Winegrape Pest Management Alliance (PMA)
Joe Browde, PMA Project Coordinator
- 9:30 am Regulations for Sulfur and Herbicides, Past Incidents, and Problem Areas
Dave Bengston, Mendocino County Ag Commissioner
- 10:00 am Sulfur Management near Sensitive Areas – *Case Studies*
Mark Welch, Welch Vineyard Management Services, Inc.
Tom Piper, Fetzer Vineyards
- 10:30 am **Break & Refreshments**
- 10:40 am Judicious Weed Management using Herbicides
John Kanagy, Nord Coast Vineyard Services
- 11:00 am Non-Chemical Alternatives for Weed Management
Kelly Maher, Domaine Chandon
- 11:45 am Weed Management Programs - Field Demonstration & Discussion
Demonstration – Programs at Fetzer, Tom Piper
Other Programs – Mark Welch, Welch Vineyard Management Services, Inc.;
Glenn McGourty, UCCE – Mendocino & Lake Counties
- 1:00 pm **Lunch**

Qualifies for 3.5 Continuing Education Hours

PMA funding provided by the California Department of Pesticide Regulation

California Wine Grape Pest Management Alliance

“Working to promote pest management practices in wine grapes that minimize potential for environmental and human impact, thereby mutually benefiting growers, communities and the environment”

Sulfur Best Management Practices & Weed Control Alternatives

**Wednesday, May 9th
Domaine Chandon – Carneros Ranch**

Agenda:

- 8:30 am Registration with free continental breakfast
9:00 Welcome & Introductions
Joe Browde, PMA Project Coordinator
9:15 Pesticide Use: Current Laws and Regulations:
Napa County Groundwater Protection Issues
Napa County Ag Commissioner’s Office
9:45 Sulfur Best Management Practices
Sensitive Areas: where are they and how to work with them
Julie Nord, Nord Coast Vineyard Services
10:00 Powdery Mildew Forecasting Model, Weather Station Data, Timing & Applications
Franci Ashton, Walsh Vineyards Management
10:15 Weed Management Practices & Alternatives
Chemical Weed Control
John Kanagy, Nord Coast Vineyard Services
10:30 Non-chemical, Alternative and Mechanical weed control strategies
Instructions on “Field Demo”
Kelly Maher, Domaine Chandon
11:00 Sulfur Use/Weed Control: Questions & Answers
Julie Nord, Joe Browde, Franci Ashton, Ag Commissioners Office, Kelly Maher, John Kanagy
11:15 Vineyard Demonstration:
 - Weed control equipment demonstration
 - Mulch, compost and herbicide weed control in the vineyard
 - Share ideas with other growers: what works for your vineyard
12:30 Free Lunch

***Breakfast & Lunch Provided by
Nord Coast Vineyard Services and Domaine Chandon***

AGENDA – Sulfur and Weed Management Meeting

May 17, 2001 @Paul Masson Vineyard, Madera

Sponsored by the California Winegrape Pest Management Alliance, Canandaigua Wine Company, Allied Grape Growers, & UCCE

- 9:00 – 9:15 Sign-in, continental breakfast (*provided by Canandaigua*)
- 9:15 – 9:20 Welcome and introductions
Jon Holmquist, Canandaigua
- 9:20 – 9:40 Overview – California Winegrape Pest Mgt Alliance (PMA)
Joe Browde, Proj Coordinator
Sulfur best management practices & reduced-risk weed management
- 9:40 – 10:00 Effectively managing sulfur applications near sensitive surroundings
Ed Rosenthal (PMA grower-cooperator)
Leland Rebensdorf (PMA grower-cooperator)
Jon Holmquist (PMA grower-cooperator)
Comments – *George Leavitt*, UCCE, Madera County
- 10:00 – 10:20 Minimizing uses of higher-risk herbicides and staying in business
Jon Holmquist (PMA grower-cooperator)
Gerald Neuwirth (PMA grower-cooperator)
Ray Jacobsen (PMA grower-cooperator)
Comments – *Kurt Hembree*, UCCE, Fresno County
- 10:20 – 10:50 Equipment demo for under-the-vine weed control @Paul Masson Vineyard (*Jon Holmquist*)
- 10:50 – 11:00 Concluding remarks
Joe Browde & George Leavitt

Qualifies for 2.0 hours of Continuing Education Credits

AGENDA

California Winegrape Pest Management Alliance Seminar and Field Day June 6 @California State University, Fresno

**Refreshments provided by Allied Grape Growers
Lunch provided by E & J Gallo Winery**

- 8:00 am **Registration & Coffee**
- 8:30 am Welcome & Description of California State University Viticulture & Enology Program
Bob Wample, Julio R. Gallo Director, Viticulture and Enology Research Center, and Department
Chair, Department of Viticulture and Enology, California State University, Fresno
- 8:40 am Overview – The California Winegrape Pest Management Alliance (PMA)
Joe Browde, PMA Project Coordinator
- 9:00 am Sulfur Management near Sensitive Areas – *Grower Case Studies*
Leland Rebensdorf, PMA Cooperator, Fresno
Ed Rosenthal, PMA Cooperator, Madera
- 9:20 am **Break & Refreshments**
- 9:40 am Judicious Weed Management using Herbicides
Kurt Hembree, UCCE-Fresno County
- 10:00 am Non-Chemical Alternatives for Weed Management
Ken Wara, E & J Gallo
- 10:20 am Reduced-Risk Weed Management – *Grower Case Studies*
John Diener, PMA Cooperator, Five Points
Ray Jacobsen, PMA Cooperator, Fresno
Eddie Bolt, PMA Cooperator, Bakersfield
- 10:40 am Regulations for Sulfur and Herbicides, Past Incidents, and Problem Areas
Doug Edwards, Deputy Agriculture Commissioner, Fresno County
- 11:15 am Weed Management Equipment Demonstrations and Discussions
- 12:45 pm **Lunch begins..**

Qualifies for 4.0 Continuing Education Hours

PMA funding provided by the California Department of Pesticide Regulation

AGENDA – Sulfur and Weed Management Meeting

9-11 am; June 20, 2001 @Rossini Farming, 800 Keyes Road, Ceres

*Sponsored by the California Winegrape Pest Management Alliance, Rossini Farming,
E & J Gallo Winery, and Allied Grape Growers*

Directions

Highway 99 to Ceres, exit Keyes Road and head WEST

Travel about 5 miles to Rossini Farming Office (800 Keyes Road, south side of road)

- 9:00 – 9:15 Sign-in, continental breakfast (*provided by Rossini Farming*)
- 9:15 – 9:25 Welcome and Introduction
Al Rossini, Rossini Farming
- 9:25 – 9:35 Overview – California Winegrape Pest Mgt Alliance (PMA)
Joe Browde, Project Coordinator
Sulfur best management practices and reduced-risk weed management
- 9:35 – 9:45 Relationships among canopy management, disease, and fungicide use
Roger Duncan, UCCE, Stanislaus County
- 9:45 – 9:55 Pesticide Safety - laws and regulations pertinent to sulfur use and
handler/applicator/worker safety
Kevin Wright, Deputy Agriculture Commissioner, Stanislaus County
- 9:55 – 10:15 Effectively managing pesticides (emphasis sulfur) near sensitive surroundings
Martin Carrillo/Kevin Chuman, PMA grower-cooperators
Jeff Brown, PMA grower-cooperator
- 10:15 – 10:35 Minimizing uses of higher-risk herbicides and staying in business
Nick Gatzman/Jeff Brown, PMA grower-cooperators
Steve Christy, PMA grower-cooperator
- 10:35 – 10:55 Equipment demonstrations for under-the-vine weed control
Bubco Enviromist Sprayer
Patchen Weed Seeker
- 10:55 – 11:00 Concluding remarks
Joe Browde, Other

Qualifies for 2.0 PCA/PCO Continuing Education Credits

**Evaluations/Comments from 4 PMA Workshops (seminar + field demos) held during spring 2001;
*standardization of data required**

Fetzer Workshop = Mendocino County

Domaine Chandon Workshop = Napa County

Kendall-Jackson Workshop = Sonoma County

California State University @ Fresno Workshop = Fresno County

How many acres do you own or farm? (1-25, 25-50, 51-100, 100-500, 500+)

Fetzer wkshop	1-25 acres = highest category
Domain wkshop	1-25 acres = highest category
K-J wkshop	1-25 acres = highest category
CSU-Fresno wkshop	100-500 acres = highest category

In what counties do you grow grapes?

Fetzer wkshop	Mendo > Napa > Sonoma > Lake
Domain wkshop	Napa > Sonoma > Solano > Marin
K-J wkshop	Sonoma > Napa > Mendo > Lake
CSU-Fresno wkshop	Fresno > Madera > Tulare

Have you ever received a citation or complaint from sulfur dust drift?

Fetzer wkshop	0 % yes	100 % no
Domain wkshop	11 % yes	89 % no
K-J wkshop	9 % yes	91 % no
CSU-Fresno wkshop	12 % yes	88 % no

How would you describe your weed control program?

*trend towards higher reliance on pre-emergent herbicides as component of weed mgt program for Fresno attendees compared to attendees of N Coast wkshops

Overall rating of speakers? (excellent, good, average, poor)

Fetzer wkshop	64 % excellent	36 % good
Domain wkshop	50 % excellent	50 % good
K-J wkshop	42 % excellent	53 % good
CSU-Fresno wkshop	58 % excellent	42 % good

Overall rating of location/facilities? (excellent, good, average, poor)

Fetzer wkshop	95 % excellent	5 % good
Domain wkshop	70 % excellent	30 % good
K-J wkshop	69 % excellent	31 % good
CSU-Fresno wkshop	91 % excellent	9 % good

Would you attend a similar event next year?

100 % yes

Would a similar event held in Spanish be helpful?

Fetzer wkshop	33 % yes	67 % no
Domain wkshop	64 % yes	36 % no
K-J wkshop	65 % yes	35 % no
CSU-Fresno wkshop	33 % yes	67 % no

What did you enjoy most about today's field day? (speakers, field demo, Q/A period, handouts)

*speakers & field demo received highest rankings, handouts relatively lower

Comments or suggestions for next workshops:

Fetzer wkshop

Good job. More of the same for next year.

Weed control speakers and demo much better than sulfur management. Too much time stating the obvious.

Less on sulfur – more on weed management, especially non-chemical.

Domaine wkshop

Kept speakers accountable and on time. Helpful.

Like the subjects as pertains to growers' experience the best.

Excellent demo.

Need better sound system.

Need to demo new sulfur sprayers.

Excellent lunch.

K-J wkshop

This was great. Thank you!

Next year, invite or come with our best worker, key man, etc.

Well-organized meeting and lunch.

Need better sound system for outdoors.

Too much time between speakers, demos, and lunch. Fill up the program.

Great social event.

More detailed information and less "Warnings".

Need more demo items.

Need hillside vineyard demo.

Field demo was poorly organized and did not feature enough items.

Add more practical/actual "how to apply" discussion. For example: how to manage nozzles, pressure, and temperature.

Also, discussion and demos were geared towards large growers. Do not forget the small guys less than 5 acres.

Fresno wkshop

Need more time for speakers and questions/answers. Too compact in a short amount of time.

Program presented very good.

Same do not change (excellent).

It went very well, like it was.

Invite media and urban neighbors to field demo sites or problem vineyard sites.

Speakers would have been better if we could have heard them better.